

Curriculum Vitae for Dr. Francis N. Gichuki

Personal information



Name: Francis Ndegwa Gichuki

DoB: May 29th 1950

Nationality: Kenya

Marital status: Married with 3 children

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1. TEACHING RESPONSIBILITIES

My teaching responsibilities are in the following areas:

- Irrigation engineering
- Drainage engineering
- Water system engineering
- Soil and water conservation engineering
- Hydrologic modeling
- Integrated river basin management
- Project planning and management
- Applied fluid mechanics
- Systems analysis

2. EXPERIENCES

2.1 IN IRRIGATION PERFORMANCE IMPROVEMENTS AND WATER USERS ASSOCIATIONS

I took several courses in irrigation performance assessment at Utah State University and have developed relevant training notes for Kenya conditions.

My post-graduate training focused on irrigation performance improvement. The Msc thesis was on improving the performance of surface irrigation by introduction of surge flow technology while the PhD was on improving the performance of conveyance and distribution system through the use of Canal Hydraulic Simulation Model. The model was test for applicability by the United States Bureau of Reclamation (see King and Gichuki publication) and was tested and applied in Thailand and Egypt by Gary Merkley (see Merkley & Gichuki Publications)

As part of my research work at the University of Nairobi, I secured a research grant and became principal research of Natural Resource Monitoring, Modelling and Management Programme which focused on the Upper Ewaso Ngiro North Basin. This program had a water users association initiative which generated decision support information and training material on the role of water users in improving water efficiency and productivity so as to reduce water use conflicts (see 1994- 2003 publications in the publication list)

As a Principal investigator of the Irrigation Water Management Research (a collaborative venture between NIB and University of Nairobi) I have mobilized a team of researchers undertake literature review and methodology formulation that is phase I of the irrigation performance improvement project. The resulting outputs are presented in the 2012 publication list.

2.2 IN WATERSHED MANAGEMENT

2008-Present: Providing technical backstopping to JICA Irrigation Advisor in the Ministry of Water and Irrigation on the following aspects:

- Watershed management requirements for sustainable irrigated water supply;
- Application of WEAP and SWAT models in watershed analysis; and
- Hydrological analysis for irrigation potential assessment.

2008-Present: Teaching watershed management and engineering to both under-graduate and post-graduate students with emphasis on the following aspects:

- Watershed analysis using WEAP and SWAT models to explore what if scenarios;
- Watershed planning;
- Watershed monitoring and evaluation;
- Structural and non-structural interventions in watersheds and their potential impacts; and
- Watershed performance appraisal and improvements.

2002-2008: Principal Researcher at the International Water Management Institute in Colombo, Sri Lanka where I lead a theme on Integrated Basin Water Management Systems of the Challenge Program on Water and Food. The main experiences that I acquired include:

- River basin analysis (I lead a baseline study on status and prospects of improving basin water productivity in Yellow River, Mekong River, Ganges, Indus, Karkheh, Nile, Limpopo, Volta, Sao Francisco river basins)
- Provided technical support to 15 research projects exploring impacts of alternative strategies in improving basin water productivity – They included small reservoir projects in Volta, Sao Francisco, Limpopo basins; livestock water productivity project in Nile basin; transboundary water governance in Chile, Volta and Limpopo basins; Decision support system for dams in the Nile basin; Wastewater irrigation in Ghana; Groundwater governance in Ganges and Indus river basins; increasing food security in Limpopo basin through integrated crop, water and soil fertility options and public private partnerships; Enhancing rainwater and nutrient use efficiency for improved crop productivity, farm incomes and rural livelihoods in the Volta Basin; Managing risk, mitigating drought and improving water productivity in Limpopo basin; Companion modeling for assessing stakeholders' perceptions of water dynamics and collective learning at the catchment scale in Mekong basin; Multiple uses of water services in Limpopo basin; and Wetlands based livelihoods in the Limpopo basin: balancing social welfare and environmental security;
- Provided technical backstopping to Basin Focal Projects aimed at integrating findings of the above projects and assessing basin wide impacts.

1996-2002: Principal investigator of Natural Resources Monitoring, Modelling and Management Project of the Universities of Berne and Nairobi. The main experiences that I acquired include:

- Setting up and maintaining hydro-meteorological monitoring network in the upper Ewaso Ngiro River basin;
- Monitoring soil moisture, water use, soil loss, runoff, crop yield at plot, farm, and catchment scales in the upper Ewaso Ngiro river basin;
- Monitoring river water availability and abstraction in the upper Ewaso Ngiro river basin;
- Raising awareness of water scarcity and options for managing demand and supply in the upper Ewaso Ngiro river basin;
- Planning and improving performance of smallholder irrigation in the upper Ewaso Ngiro river basin; and
- Mobilizing community, government, private sector and political support to reduced soil loss and improve water productivity.

1992-1996: Principal investigator of a Machakos/Makueni study of the Overseas Development Institute of UK and University of Nairobi. The main experiences that I acquired include:

- Analysis of historical profiles of change in watersheds in Machakos and Makueni districts;
- Managing an interdisciplinary team; and

- Documenting best-practices and sharing knowledge and experience.

2.3 IN SYSTEMS ANALYSIS AND SCENARIO MODELLING

1987 – Involved in the development of a model to assess the effects of projected CO²-induced climatic changes on irrigation water requirements in the Great Plains States and carrying out analysis of the U.S Environmental Protection Agency. The resulting publications were: Allen R. G. and Gichuki F. N. 1988; and Allen R. G., Gichuki F.N. and C. Rosenzweig. 1991.(see details in the list of publications by year).

1985-1988 – Developed a branching irrigation canal network hydraulic model as part of my PhD studies at Utah State University. The model was latter upgraded and applied by United States Bureau of Reclamation and by consultants in modeling irrigation water conveyance and distribution in Egypt and Thailand. Was also involved in a three month study with the US Bureau of Reclamation to perform the following tasks: (a) modification of the model to incorporate hydraulic regimes found in USBR projects but not included in the original version; (b) field verification of the model; and (e) preliminary development of an expert system driver shell in conjunction with University of Colorado, Boulder. The resulting publications were: Gichuki, F. N. 1988; Gichuki, F. N. 1988; Gichuki, F. N. 1988; King, D. L. and Gichuki F. N.: 1988; Gichuki, F. N., Walker W. R. and Merkley, G. P.: 1990; Merkley, G. P., Walker W. R. and Gichuki, F. N.: 1990; Merkley, G. P., Walker W. R. and Gichuki, F. N.: 1987 see details in the list of publications by year).

2.4 IN DATABASE AND GIS INFORMATION SYSTEMS DEVELOPMENT

In 1995-2002 – Was principal investigator of the Natural Resources Monitoring, Modelling and Management Project of University of Nairobi and University of Berne during which we developed a Natural Resources Information System for the Upper Ewaso Ngiro North Basin. Programs developed and publications produced during the execution of this project include: Gichuki F. N. and Njeru J., 2001;Gichuki F. N. and Njeru J., 2000: Gichuki F. N. and Njeru J., 2000: Gikonyo J., Gichuki F.N. and Liniger H.P., 1997;Gikonyo J., Gichuki F.N. and Liniger H.P., 1997;;Gichuki F. N., 2003: ;Wiesmann, U., Gichuki F. N., Kiteme B. and Liniger H.P., 2000. ;Gichuki F. N., Gichuki P.G. and Muni R. K. 1999. ;Gichuki F. N., Liniger H.P., MacMillan L. C., Schwilch G., and Gikonyo J. K., 1998. ;Liniger H.P., Gichuki F. N., Kironchi G. and Njeru L., 1998. ;Ngigi, S.N, H.H.G. Savenije and F.N. Gichuki. 2008; Ngigi, S.N, H.H.G. Savenije and F.N. Gichuki. 2008. (see details in the list of publications by year)

2002-2008 – Was Project leader of a project charged with the responsibility of the Project leader of Integrated Data and Information System for the Challenge Programme on Water and Food charged with the responsibility of developing web-based data-base and GIS information for nine international basins (Yellow river, Mekong, Indus/Ganges, Karkheh, Nile, Limpopo, Volta, Sao Francisco and Andes Basins) on food and water challenges, program interventions, program impacts and lessons learnt. The relevant publications include: Machand P. and Gichuki F., 2006;Cisneros H. and Gichuki F. N., 2003;;Brito R. and Gichuki F. N., 2003;Andah W. and Gichuki F. N., 2003;;Moustafa M. and Gichuki F. N., 2003;Louw A. and Gichuki F. N., 2003;Sikka A. and Gichuki F. N., 2003;Geheb K. and Gichuki F. N., 2003;Xiaoyan L. and Gichuki F. N., 2003: ;Gichuki, Francis; Molden, David. 2008; Gichuki F., and Cook S., 2008.;Gichuki Francis and Peter G. McCornick. 2008.. (see details in the list of publications by year)

2.5 IN POLICY AND PROGRAM SUPPORT

2008-Present: Providing technical backstopping to JICA Irrigation Advisor in the Ministry of Water and Irrigation on the following aspects:

- Strategies for enhancing donor participation and coordination in the irrigation sub-sector
- Irrigation Reform Implementation Strategies
- Framework of JICA support to irrigation development in Kenya
- Public-private partnerships in irrigation development and management

Aug 2010-Apr 2011: Served as a consultant for AGRA (Alliance for a Green Revolution in Africa) charged with the development of their water strategy. My contributions were in the following issues:

- Interventions and investment opportunity analysis
- Program design
- Financing strategies and partnerships
- Monitoring and evaluation

2002-2008 Synthesis of findings of research projects under, the Integrated Basin Water Management Theme of the Challenge Program on Water and Food, on policy, institutions, information and management issues.

1992-1998 Natural resources management policy research funded by ODA/UK, World Bank, Rockefeller, Sida/SAREC and Swiss Development Cooperation whose major outputs were:

- publication of book - Tiffen M., Mortimore M and Gichuki F., 1994. More people, Less erosion: An Environmental Recovery in Kenya. John Wiley and Sons, UK.
- Formulation of policy requirements for farmer investments
- Options for enhancing utilization of Bura Irrigation Project
- Guidelines for river water users associations and irrigation water users associations
- Lobby for increased investments in hydrometeorological monitoring and utilization of the data

1989-1995 Provided technical backstopping to the Smallholder Irrigation Development Program of the Ministry of Agriculture on the following issues:

- Prioritizing irrigation and drainage projects for development support
- Cost-sharing arrangements for different socio-economic contexts of the beneficiaries
- Environmental friendly land drainage for agriculture
- In developing irrigation/drainage project donor exist strategies
- In setting up an irrigation fund (establishment of SISDO)

Nov.- Dec. 1985 - Worked as a member of a USAID team recruited to evaluate opportunities and constraints of irrigation development in Kenya. Responsibilities were to assist the irrigation engineer in the team in collecting and analyzing technical data relevant to the study and to prepare a report on manpower needs and training activities.

2.6 IN PLANNING OF IRRIGATION AND DRAINAGE SYSTEMS

- 1985-1988 Participated in a study on allocation of water rights to American Indians (A Bureau of Indian Affairs project) – My assignment with Keller-Bleisner Engineering was to estimate irrigation water requires for Indian Reservations in Utah and Montana.

- 1991-1995 - Was a lead consultant of Smallholder Irrigation Development Program responsible for providing technical backstopping to irrigation and drainage engineers of the Ministry of Agriculture involved in the preparation of District Irrigation and Drainage Profiles
- 1991 – Developed a drainage manual to be used by irrigation and drainage engineers in assessing drainage potential and strategies and approaches for tapping the potential. A project funded by Smallholder Irrigation Development Program.
- 1992 – Was Team leader for a project to guide future drainage project planning by identifying environmental impacts and how to mitigate them. Client - Smallholder Irrigation Development Program of the Irrigation and Drainage Branch, Ministry of Agriculture
- 1995-1997 – Was involved in assessing water resources, irrigation requirements and planning irrigation development in the upper Ewaso Ngiro River Basin as part of the NRM research and monitoring project of Laikipia Research Program and University of Nairobi.
- 2001-2002 – Was a lead consultant on irrigation planning in the Ewaso Ngiro North Development Authority a component of Ewaso North River Catchment and Water Resources Management study carried out by Nippon Koei in 2002 and funded by African Development Bank
- 2002-2008 - As Theme Leader of Integrated Basin Water Management System of the Challenge Program on Water and Food I provide technical backstopping to projects involved in the assessing basin water resources, basin water use accounting, irrigation water allocations, and water storage for irrigation in nine international basins (Yellow river, Mekong, Indus/Ganges, Karkheh, Nile, Limpopo, Volta, Sao Francisco and Andes Basins)
- 2009 – Was lead consultant for Wanjohi Engineering Consultant on a one-month rapid assessment and formulation of Kenya’s Irrigation and Drainage Master Plan. The client was MoWI-DIDWS
- 2010 – Prepared a concept paper on “Agricultural Water Programme in Western, Nyanza, Coast, Rift Valley, Central and Eastern Provinces” for MoWI-DIDWS for consideration by African Development Bank
- 2010 – Was commissioned by JICA Irrigation Advisor to assess drivers of irrigation and drainage development and propose a framework for JICA support to Irrigation and Drainage Development in Kenya.

2.7 IN PROJECT PREPARATION, EVALUATION AND APPROVAL

1989-1995 - Was a lead consultant of Smallholder Irrigation Development Project (1989-1995) -involved in the development of training material and conducting short courses on irrigation project preparation and evaluation

1990-94 - Served as a member of Irrigation and Drainage project review team charged with the responsibility of developing and applying standards for use in screening feasibility, design and implementation project document and approving those that met required standards. Client - Smallholder Irrigation Development Program of the Irrigation and Drainage Branch, Ministry of Agriculture

2002-2008 – As a Theme Leader of the Integrated Basin Water Management theme of the Challenge Program on Water and Food, I was involved in supporting project preparation and in project evaluation and approval for the development of theme project portfolio

2.8 IRRIGATION AND DRAINAGE DESIGN AND EVALUATION

1996 - Participated in a multi-disciplinary team that evaluated the National Soil and Water Conservation Programme of the Ministry of Agriculture and proposed strategies for transformation from a soil conservation focus to a resource management and productivity enhancement.

1996 - Evaluated African Highlands Initiative, an Eco-regional Research Program and proposed modalities for enhancing effectiveness of the collaborative research programme.

1989-1995: Undertook the following irrigation and drainage design and evaluation tasks for the Smallholder Irrigation Development Program (SIDP) of the Irrigation and Drainage Branch, Ministry of Agriculture:

- Made technical contributions to the development of smallholder irrigation and drainage evaluation and design manuals
- Prepared an drainage identification, evaluation and design manual
- Assist SIDP in development of criteria for ranking irrigation and drainage projects
- Served as a member of an irrigation panel charged with the responsibility of support quality improvement of irrigation design and approving them
- Supported irrigation and drainage engineers in carrying out topographic and hydrologic analysis
- Provided technical support in the preliminary design of 38 drainage projects in the 10 districts considered to have high potential for drainage development - Kiambu, Muranga, Nyeri, Nyandarua, Transzoia, Uasin Gishu, Kakamega, Busia and Bungoma.
- Supervised detailed investigations and design of over 40 irrigation projects
- Support SIDP in the preparations of guidelines for cost-sharing and for assessing employment creation, production and financial improvement of/and role of youth and different genders in individual smallholder irrigation.
- Checked feasibility study and designs reports for over 40 irrigation projects and 5 drainage projects.

1995-2002 : Within the NRMMP project of the University of Nairobi and University of Berne, I undertook the following tasks

- Carried out the investigation and design of Kalalu, Pesi and Ol bolosat Drainage project
- Carried out the investigations and design of Sirimon, Thome, Kiamariga, New Mutaro, Kalalu and Pesi irrigation projects
- Promoted the use of bucket kit drip irrigation systems
- Carried out hydrological analysis for the design of Karura dam
- Carry out investigations of the hydrologic impacts of the construction of Kihoto and Archers Post Dams in the Ewaso Ng'iro river.

1997-2002: As a Board member of Smallholder Irrigation Scheme Development Organization I undertook the following tasks

- Prepared RFPs and reviewed feasibility, design and tendering documents for the Mbinya, Kagati, Ciabaraga and Mwethya Muveleki irrigation projects
- Prepared guidelines for assessing farmers repayment capabilities and willingness
- Supervised construction of Ciabaraga and Mwethya Muveleki irrigation projects

1986-1987- Worked part-time for Keller-Bliesner Engineering Consulting Company Logan, Utah. While working for them, I undertook the following assignments:

- development of a spreadsheet based model to simulate hydrologic and economic scenarios of irrigation projects;
- cost estimates for rehabilitation of irrigation projects in Montana;
- review of hydraulic design and hydrologic analysis of project in New Mexico; and
- development of on-farm irrigation scheduling and management strategies for irrigation projects.

Summer 1982, 1983 - Worked for Leslie's Jones Company in Twin Falls, Idaho. Activities included operation and maintenance farm machinery (seedbed preparation, hay harvesting and combine harvesters), and surface and sprinkler irrigation operation. A total working experience of 8 months.

Summer, 1988 A three month study with the US Bureau of Reclamation to perform the following tasks: (a) modification of the model to incorporate hydraulic regimes found in USBR projects but not included in the original version; (b) field verification of the model; and (e) preliminary development of an expert system driver shell in conjunction with University of Colorado, Boulder.

2.9 REVIEWING, SYNTHESIS AND WRITING SKILLS

1989-2002 - During the course of supervising 25 Msc and PhD graduate students, I acquired extensive experience in support students review, synthesis and publish their works

1992-1994 – Involved in review and synthesis of multidisciplinary working papers which culminated in the publication of book - Tiffen M., Mortimore M and Gichuki F., 1994. More people, Less erosion: An Environmental Recovery in Kenya. John Wiley and Sons, UK.

1992-2002 – Was project leader of several projects which required synthesis of multi-disciplinary research finding.

200-2008 – While working as Theme Leader of the Integrated Basin Water Management theme of the Challenge Program on Water and Food, I undertook extensive reviews of outputs of project in Integrated Basin Water Management theme portfolio and synthesized the findings for publications in the Challenge Program on Water and Food Annual Reports. For example the publication below:

Harrington, L., Humphreys, E., Huber-Lee, A., Nguyen-Khoa, S., Cook, S., Gichuki, F., Johnson, N., Ringler, C., Geheb, K. and Woolley, J. 2008. A Summing Up: Synthesis 2007. CPWF Annual Synthesis Reports. The CGIAR Challenge Program on Water and Food, Colombo, Sri Lanka. 84pp.

2.10 MSc AND PHD SUPERVISION

The Msc thesis that I have supervised include: Influence of rainfall on vegetation dynamic in Mukogodo area (1998/99); Potential for supplemental irrigation in Mwala area, Machakos District (1998/99); Rainfall-Runoff-Soil loss relations in Eritrea (1996/97); Performance and constrains for adoption of soil and water conservation measures in Gojam Highlands, Ethiopia (1996/97); River flow regulation in the Ewaso Ng'iro North Basin (1996/97); Soil loss in the Ewaso Ng'iro North Basin (1996/97); Water harvesting potential in Timau area (1996/97); Performance of trashline in Lower Embu (1996/97); Performance of irrigation water delivery sub-systems in Kenya and Zimbabwe (1996/97); Water and fertilizer use in smallholder irrigation systems in Kenya and Zimbabwe (1996/97); Yield Response to Water in Naru Moro Basin (1994/95); Agro-economic performance of irrigation systems in Naru Moro Basin (1994/95); Grass strips for water conservation. (1994/95); Application of a catchment hydrology model (1992/93); Water use in Sagana Irrigation Project (1992/93); Computer aided design in irrigation engineering (1992/93); Water harvesting in Kitui District (1990/91); Irrigation water use efficiency (1990/91); Hydrologic modelling of small watersheds (1990/91); Hydrologic monitoring of a poorly drained area (1990/91); Water balance study of the upper reach of the Naru Noro river (1990/91); Water balance study for steep sloping lands; A Kabete study (1990/91); Water use studies under agroforestry systems (1990/91); Evaluation of sprinkler irrigation project

– Kibirigwi Irrigation Scheme (1989); Salinity control in Taita Taveta irrigation schemes (1989); Technical performance of furrow irrigation systems in Bura (1989); Analysis of seepage losses in Bura irrigation main canal (1989); Hydraulic performance of small basin irrigation (1989)

The PhD thesis that I have supervised include: Development of a catchment hydrology model. Study undertaken by M. Thomas (1992-96); Soil Water Balance Modelling. Study undertaken by G. Kironchi (1992-97); Effectiveness of tree-pruning mulch for soil and water conservation. Study undertaken by R. Chiti (1993-96); Soil and runoff loss under alley cropping system. Study undertaken by Kinama (1993-97); Water use and primary production modelling. Study undertaken by G. Njeru (1994-98); Water abstraction accounting and allocation. Study undertaken by Gikonyo (1998-); Soil erosion hazard assessment in the Upper Ewaso Ng'iro North basin. Study undertaken by Bancy Mati (1995-98); Conservation tillage in semi-arid areas of Machakos. Study undertaken by Gichuki Muchiri (1997-); Hydrologic implication of land use change. Study undertaken by Lindsay MacMillan (1997-)

3. EMPLOYMENTS – POSITION, RESPONSIBILITY AND ACHIEVEMENTS

3.1 JUNE 2008 - PRESENT

Position: Senior Lecturer, University of Nairobi

Responsibilities

Teaching, research and consultancy in agricultural water management, irrigation and drainage and associated environmental issues

Key achievements

- Integration of experiences gained while working at IWMI into the irrigation, drainage, water management and environmental lecture notes
- Development of lecture notes on watershed engineering and analysis of Lake Naivasha and Nyamindi watersheds
- Review of the biosystems and environmental engineering curriculum and stakeholder consultations
- Participation in Ministry of Water and Irrigation institutional reform study
- Consultancy in the development of irrigation and drainage master plan of the Ministry of Water and Irrigation
- Publication of journal articles
- Performance assessment of green house irrigation in Nyandarua District and the design and construction of 3 green houses for farmers in Njoro area

3.2 SEP 2002 TO MAY 2008

Position: Principal Researcher, International Water Management Institute, Colombo, Sri Lanka

Responsibilities

1. Theme leader of the Integrated River Basin Management Theme of the Challenge Program on Water and Food. The specific tasks included research support and supervision and synthesis and dissemination of research findings from the following theme projects:

- Enhancing livestock water productivity in the Nile basin
- Small reservoirs performance in Volta, Sao Francisco and Limpopo basins
- Decision support systems for dams in the Nile Basin
- Utilization of wastewater in urban agriculture in the Volta basin
- Water governance and modelling in Ghana and Chile
- Groundwater governance in Indus, Ganges and Yellow river basins
- Trans-boundary water governance in Volta and Limpopo basins

2. Member of the Program Management Team responsible for development of guidelines for project proposal writing, project selection and monitoring and evaluation

3. Provide technical backstopping to the Basin Focal Project particularly on integration issues

4. Support the development of a data and information system for the program

Key achievements

- Participated in the development of Challenge Program on Water and Food proposal development (80 million Dollar project)
- Organized global and regional conferences
- Developed guidelines for project selection, reporting, monitoring and evaluation
- Led and supported the development of an integrated data and information system for the program.
- Support the implementation of the theme based projects and of the basin focal project
- Promoted linkages among projects with the program and with other projects
- Synthesized and disseminated research findings
- Publication of journal articles (see list of selected publications)

3.3 JAN 1989 TO AUG 2002

Position: Lecturer and later Senior Lecturer, University of Nairobi

Responsibilities

Teaching, research and consultancy in agricultural water management, irrigation and drainage and associated environmental issues

Key achievements

- Developed lecture notes on irrigation and drainage

- Taught irrigation, drainage, hydrology and soil and water conservation courses to undergraduate and post-graduate students
- Supported post-graduate studies for 25 MSc and 6 PhD students
- Developed proposal and secured funding for post-graduate training from African Academy of Sciences, Rockefeller Foundation, Swiss Development Cooperation and Sida-SAREC
- Managed funds and provided regular reporting and monitoring and evaluation reports for the above projects.
- Developed drainage manual for the Smallholder Irrigation Development Project (SIDP) of the Ministry of Agriculture
- Developed guidelines for the evaluation of irrigation and drainage projects supported by SIDP
- Participated in project selection panel of the SIDP
- Contributed towards the establishment and operation of 3 NGOs – SISO a community based irrigation management NGO, SISDO that provided affordable credit for irrigation development and seasonal inputs; and Manor House for training in sustainable agriculture.
- Participated in the development and implementation of the following north-south collaborative research projects i) Machakos study that culminated in the book More People Less erosion and ii) Support for the Ewaso Ngiro natural resource management project supported by SDE, SSPE and Rockefeller foundation that culminated in the development of several natural resource management tools and information.
- Provided technical support to the UNDP project on Pastoral Integrated Project that promoted water harvesting and supplemental irrigation in arid areas.
- Provided technical support for the development of District Environmental Profiles for Machakos, Makueni, Isiolo and Marsabit Districts
- Publication of journal articles (see list of selected publications)

3.4 AUG 1982 TO DEC 1989

Position: Student and Graduate Research Assistant, Utah State University, Logan, Utah, USA

Responsibilities

Study irrigation and drainage science, principles and practices

Part time work

Key achievements

- A GPA of 3.78 out of 4 and maintained merit status as a Dean's list student
- Development of a computer model as part of MSc studies that supported optimization studies for the innovative surge irrigation practice
- Development of a computer model (CANSIM - Canal simulation) as part of my PHD studies. This model was adapted and applied by the USBR and in Thailand and Egypt.
- Evaluated the development of localized irrigation system model
- Participated in the design of sprinkler irrigation project under Keller-Blisner consulting firm.
- Participated in a 1985 field study on irrigation in Kenya that led to the USAID publication – Watering the Shamba
- Publication of journal articles (see list of selected publications)

3.5 JAN 1973 TO JUL 1982

Position: Agricultural Officer/lecturer 1973-1975; Assistant lecturer Egerton college 1976; Senior Technician, Kenya Pipeline Company 1977; and Senior Technician University of Nairobi – 1978-1982

Responsibilities

- 1973-75 Teaching farm power and machinery to farm managers and farm machinery operators at large scale farmers training center in Eldoret
- 1976 Teaching farm power and machinery to diploma students at Egerton College
- 1977 Civil mechanical inspection works for the construction of Mtito Andei Pumping Station and laying the pipeline between Mtito Andei and Maungu
- 1978-1982 Senior Technician supporting practical teaching at the University of Nairobi's Department of Agricultural Engineering. Taught the following practicals – Surveying, irrigation and drainage, Soil conservation, tractor driving and ploughing
- Financial and human resources management at departmental level

Key achievements

- Successfully taught farm machinery operation, maintenance and repair
- Installed a demonstration windmill at Egerton College
- Participated in the design and construction of a wastewater disposal facilities at Egerton University
- Identified various design flaws during the construction works at the Kenya Pipeline
- Obtained a scholarship to study irrigation engineering in Italy.

4. PROFESSIONAL MEMBERSHIP, HONORS AND AWARDS

4.1 PROFESSIONAL MEMBERSHIP

IMAWESA - a network of professionals, institutions and stakeholders who practise, support or advocate for improving water management for agriculture.

Kenya Irrigation and Drainage Association

Steering Committee Member of Comprehensive Assessment of Water in Agriculture – a CGIAR programme

Member of the Kenya Society of Agricultural Engineers.

Subscriber and Board Member of Smallholder Irrigation Scheme Development Organization (SISDO), an non-profit making, non-governmental organization with tire objectives of providing loans for implementation of gravity-fed, group-based smallholder irrigation schemes for high value crops.

Subscriber and Board Member of Smallholder Irrigation Support Organization (SISO), air nonprofit making, non-governmental organization with the objectives of creating air operational fund, based on payment of water fees by farmers, which will be used for the maintenance of major works of South West Kano irrigation project.

Subscriber and Board Member of Water Users Association Support Organisation (WUASO), a non-profit making, non-governmental organisation with the objectives of providing technical assistance to domestic and irrigation water users' association members.

Trustee of Manor House, an non-profit making, non-governmental organisation with the objectives of promoting sustainable agricultural development through promotion of bio-intensive agricultural production systems.

4.2 HONORS AND AWARDS

Tau Beta Pi, American Engineering Honour Society

Deans List, College of Engineering, Utah State University

5. PUBLICATION LIST

5.1 2012 PUBLICATIONS

1. Gichuki, F. N. (2012). Module 1 - Methodology for Diagnostic Analysis of Irrigation Scheme FEB 642 Advanced Irrigation Topics Training Material. Nairobi, Kenya, Department of Environmental and Biosystems Engineering, University of Nairobi.
2. Gichuki, F. N. (2012). Module 2: Irrigation Efficiency and Productivity. FEB 642 Advanced Irrigation Topics Training Material. Nairobi, Kenya, Department of Environmental and Biosystems Engineering, University of Nairobi.
3. Gichuki, F. N. (2012). Module 3: Irrigation Benchmarking : Principles and Practices. FEB 642 Advanced Irrigation Topics Training Material. Nairobi, Kenya, Department of Environmental and Biosystems Engineering, University of Nairobi.
4. Gichuki, F. N., S. Mwatha, D. M. Okinyi and R. Wanjogu (2012). Benchmarking Irrigation Performance: Issues, Concepts and Methods. MIAD - Irrigation Water Research Report No: 2. Wanguru, Kenya, Mwea Irrigation Agriculture Development, National Irrigation Board. (DRAFT)
5. Gichuki, F. N., S. Mwatha, D. M. Okinyi and R. Wanjogu (2012). Irrigation Water Research: Priority issues and the potential outcomes and impacts. MIAD - Irrigation Water Research Report No: 1. Wanguru, Kenya, Mwea Irrigation Agriculture Development, National Irrigation Board.
6. Gichuki, F. N., S. Mwatha, D. M. Okinyi and R. Wanjogu (2012). Scheme Water Management Problems: Solutions and Their Potential Impacts. MIAD - Irrigation Water Research Report No: 4. Wanguru, Kenya, Mwea Irrigation Agriculture Development, National Irrigation Board. (DRAFT)
7. Gichuki, F. N., N. Mwaura and K. Ben (2012). Irrigation Development Plan, National Irrigation Board, Norcken International and Frame Consulting.
8. Gichuki, F. N., R. Wanjogu, S. Mwatha and D. M. Okinyi (2012). Improving Irrigation Efficiency And Productivity: Data and Information Needs and Management. MIAD - Irrigation Water Research Report No: 7. Wanguru, Kenya, Mwea Irrigation Agriculture Development, National Irrigation Board. (DRAFT)
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10. Mwatha, S., F. N. Gichuki, D. M. Okinyi and R. Wanjogu (2012). Water Users Associations: Experiences for Developing Countries and Lessons for Kenya. MIAD - Irrigation Water Research Report No: 3. Wanguru, Kenya, Mwea Irrigation Agriculture Development, National Irrigation Board. (DRAFT)
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