

CURRICULUM VITAE

July, 2018



NAME: Prof. Mwakio P. Tole, PhD.

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PERSONAL DATA:

Date of Birth: 2nd June, 1954
Place of Birth: Kwale, Kenya
Citizenship: Kenyan
Marital Status: Married with 3 Children

CURRENT POSITIONS:

Professor of Environmental Geochemistry, Department of Environmental Sciences, Pwani University (Since May, 2009)

PREVIOUS POSITIONS:

Deputy Vice Chancellor (Administration, Finance and Planning), Pwani University (February, 2013 – July 2018);

Deputy Principal (Administration and Finance), Pwani University College (September 2009 - January 2013);

Acting Deputy Vice Chancellor (Academic) Kenyatta University (September 2008 – May 2009)

Chairman, Department of Environmental Sciences (June 2004 – August 2008)

Professor of Environmental Geochemistry, School of Environmental Studies, Moi University (May, 1992 – October 2003)

Dean, School of Environmental Studies, Moi University (Sept., 1995 – Sept., 1996)

Dean, School of Graduate Studies, Moi University (Aug., 1990 – Oct., 1994).

Associate Professor, School of Environmental Studies, Moi University (Feb., 1989 – May, 1992)

Senior Lecturer, Department of Geology, University of Nairobi (June, 1987 – Jan., 1989)

Lecturer, Department of Geology, University of Nairobi (Feb., 1982 – June, 1987)

Graduate Assistant & Research Assistant, Department of Geosciences, Pennsylvania State University, U.S.A. (Aug., 1977 – Nov., 1981)

Tutorial Fellow, Department of Geology, University of Nairobi (Sept., 1976 – Feb., 1982)

HONORARY POSITIONS:

1984 - 1989: Faculty of Science Representative to Senate, University of Nairobi.

1994 - 1999: Member, Research Committee, Kenya National Council for Science and Technology.

1996 - 2000: Member, Board of Governors, Shimba Hills Secondary School, Kwale.

1996 - 2003: Coordinator, Capacity Building Component, Lake Victoria Environmental Management Project.

2001 - 2002: Coordinator, IAEA Project RAF/8/034 - Isotope Hydrology Integration in the Water Sector.

2001 - 2004: Member, National Environmental Management Council, Kenya

2001 – 2010: Member and Chairman of the Board, Youth Enterprise Foundation

2002: Member, Conference organizing Committee, Wetlands, Tanzania

2002: Member International Panel of Scientists, ICHWAM conference, Hyderabad, India

2002 – 2010: Member, International Editorial Advisory Board, PeCOP Journal of The Sciences, Nigeria

2003 – Present: Member, Kubo Educational Foundation (Secretary 2005 - 2007, Chairman 2007 - 2010)

2005 – 2010: Member, Kenya National Working Group on the WIOLaB Project on water, sediment and biota quality assessment and monitoring

2005 – 2010: Patron, Taita – Taveta Kenyatta University Students Association

2006 – 2007: Member, Scientific Committee, 6th Conference on Wastewater Reclamation and Reuse for Sustainability, Antwerp, Belgium

2007 – 2010: Member, NEMA Board of Management, and Chairman, Research, Planning and Development Committee.

2007 – 2010: Member, Board of Trustees of the NEMA Retirement Fund Scheme

2007 – 2010: Chairman, Environment Committee, Kenya Alliance of Residents Associations (KARA)

- 2007–2008: Co-chair, Organising Committee, First National Conference on the Environment, Kenya
- 2007 –2010: Chair of the WIO-LaB Regional Working Group on Water and Sediment Quality
- 2008: Member, Kenya National Committee on “International Year of Planet Earth”
- 2008 – 2010: Member, International Advisory Committee, International Conference on Hydrology and Watershed Management, Hyderabad, India, February 2010.

MEMBERSHIP TO PROFESSIONAL BODIES

Member, International Water Association
 Member, International Association of Hydrological Sciences
 Member, Kenya Institute of Environmental Assessment (Co-opted Council Member 2004 - 2007)
 Member, Eastern Africa Association for Impact Assessment
 Member, Geological Society of Kenya
 Fellow, of the Geological Society of Kenya (since 2014)
 Member, Institute of Directors (Kenya)

EDUCATION:

- 1973 – 1976: University of Nairobi. (B.Sc. 1st Class Honours, Geology, Chemistry)
- 1977 – 1979: Pennsylvania State University. (MS. Geochemistry/Mineralogy; thesis title, “The uranium content of zircons from the Catskill Formation, Eastern Pennsylvania” – Supervisor, Prof. A. W. Rose).
- 1979 – 1981: Pennsylvania State University. (Ph.D. Geochemistry; thesis title, “Factors controlling the kinetics of silicate – water interactions” – supervisor, Prof. A. C. Lasaga).
- 1988 (Sabbatical): United Nations University, Orkustofnun, Iceland. Research: “Chemistry of geothermal fluids”.
- 1994/95 (Sabbatical): Commonwealth Senior Academic Staff Fellowship. Univ. of Manchester, U.K. Research: “Kinetics of Mineral – Water interaction”.

CONFERENCES, SEMINARS AND WORKSHOPS:

1. Oct., 1978: 43rd Annual Field Conference of Pennsylvanian Geologists, Hazleton Pennsylvania, U.S.A.
2. Nov., 1981: 9th Annual Meeting of the Geological Society of America, Cincinnati, Ohio, U.S.A. Presented a paper, “Factors controlling the dissolution kinetics of nepheline”.

3. June, 1982: Regional Seminar on Geothermal Energy in Eastern Africa, Nairobi, Kenya.
4. July, 1982: Paper accepted for presentation at the II International Seminar on Lateritisation Processes, Sao Paulo, Brazil.
5. Dec., 1982: 6th Conference on African Geology, Nairobi, Kenya. Co-presented two papers: (1). “Geology of Ithanga Hills Area” and (2). Trace element studies of some spheroidal rocks from the Precambrian Mozambique belt around Thika area, Kenya”.
6. Mar., 1984: 1st Conference on the Geology of Kenya, Nairobi Kenya. Secretary to the Organising Committee.
7. Sept., 1984: International Symposium on Hydrochemical Balances of Freshwater Systems, Uppsala, Sweden. Presented a paper, “Some implications of the role of kinetics in enhancing element transport”.
8. Nov., 1984: Olkaria Geothermal Development Scientific and Technical Review Meeting, Nairobi, Kenya.
9. Sept., 1985: 2nd Annual Conference on the Geology of Kenya, Nairobi, Kenya.
10. Oct., 1985: International Seminar on Laterite, Tokyo, Japan. Presented a paper, “Thermodynamic and kinetic aspects of formation of bauxites”.
11. Nov./Dec., 1985: IAEA Regional Training Course on Radiochemistry and Analytical Techniques in Nuclear Science, Nairobi, Kenya. Presented two invited papers: (1). “Tracers in Geochemistry”, and (2). “Analytical Techniques in Mineral Resources Evaluation”.
12. June, 1986: 3rd Annual Conference on the Geology of Kenya, Nairobi, Kenya. Chairman, Conference organising Committee.
13. Feb., 1987: UNDP/DTCD Technical Review Meeting on exploration of geothermal energy, Nairobi, Kenya. Presented an invited paper, “Geochemistry of low enthalpy geothermal areas in Kenya”.
14. Apr./May, 1987: International Workshop on the standardisation of Kiswahili vocabulary in physics, chemistry, biology, and linguistics, Dar es Salaam, Tanzania. Chairman, Working Committee on Chemistry.
15. Oct., 1987: 4th Annual Conference on the Geology of Kenya. Presented a paper, “The sweet waters of Meru district”.

16. May, 1988: V. M. Goldschmidt Conference of the Geochemical Society, Baltimore, Maryland, U.S.A. Presented a paper, "Deposition of metals from the Jombo Hill Geothermal field, Coast Province, Kenya".
17. Aug., 1988: International Workshop on the Deposition of solids in Geothermal Systems, Reykjavik, Iceland.
18. May, 1989: National Symposium on Environmental Studies in Moi University Kenya, Kabarnet, Kenya. Presented a paper, "Curricula in Physical Sciences".
19. Sept., 1989: Symposium on Environmental Pollution and its Management in Eastern Africa, Dar es Salaam, Tanzania. Presented a paper, "Environmental Effects of Geothermal Power Generation and Utilisation".
20. Sept., 1989: 1st National Research Workshop on Meteorological Applications and Services, Nairobi, Kenya. Presented an invited paper, "Geothermal Energy".
21. March, 1990: Eburru Scientific Review Meeting, Nairobi, Kenya. Invited Participant.
22. Apr./May, 1990: V. M. Goldschmidt Conference of the Geochemical Society, Baltimore, Maryland, U.S.A. Presented a paper, "Effects of analytical uncertainties on complete fluid/mineral equilibria calculations: an example of Al".
23. Aug., 1990: International Symposium on Geochemical Prospecting, Prague, Czechoslovakia. Paper accepted for presentation, "Correlation between chemically and physically transported barium anomalies over the Vitengeni lead/barite mineral deposit, Coast Province, Kenya".
24. Aug., 1990: International Symposium on Geothermal Energy, Kilauea Iki, Hawaii, U.S.A. Paper accepted for presentation, "Chemical geothermometry and resource potential of low enthalpy geothermal systems in Kenya".
25. Aug., 1990: Regional Seismological Assembly in Africa. Nairobi, Kenya. Presented a paper, "Chemistry and potential of low enthalpy geothermal resources in Kenya".
26. Sept., 1990: 15th Colloquium on African Geology, Nancy, France. Paper accepted for presentation, "Mineral and thermal waters of Kenya – an update".

27. Oct., 1990: Review meeting of the British – Kenyan geothermal exploration project. Invited Participant.
28. Dec., 1990: African Regional Conference on responsibilities towards future generations and their environment, Nairobi, Kenya. Invited Participant.
29. June, 1991: Workshop on causes and consequences of sea level changes in the western Indian Ocean coasts and islands, Mombasa, Kenya. Presented a paper, “Coastal sediment dynamics in a changed climate”.
30. July, 1991: World Bank Environment and Development seminar on integrating environmental considerations into the development process in Africa, Harare, Zimbabwe.
31. Sept., 1991: 2nd International Symposium on Environmental Geochemistry, Uppsala, Sweden. Co-presented a paper, “Lead pollution from motor vehicle emissions in Uasin Gishu district, Eldoret, Kenya”.
32. Nov., 1991: Africa International Conference on Environment, Maputo, Mozambique. Presented a paper, “Geothermal and solar energy for sustainable development in Africa – possibilities and dangers”.
33. Feb., 1992: DSE/KU National staff development workshop, Mombasa, Kenya. Presented a paper, “Staff development programmes in Moi University”
34. Sept., 1992: International Conference on Industrial uses of geothermal energy, Reykjavik, Iceland. Paper read, “Possibilities for Industrial Applications of Geothermal Heat in Kenya”.
35. Nov., 1992: Regional Workshop on Environmental Education Networking, Nairobi, Kenya. Chairman of the Workshop.
36. July, 1993: World Bank/EDI meeting on the energy sector in southern Africa, Gaborone, Botswana.
37. Oct., 1993: UNEP/WHO/ILO Seminar on training approaches for environmental management in industry, Mauritius.
38. Nov./Dec., 1993: African Studies Association meeting on History of land use in Africa, Boston, U.S.A.
39. Apr., 1994: Workshop on Environmental Impact Assessment of the 2nd Mombasa and Coastal Water supply engineering and rehabilitation project, Tsavo, Kenya. Presented an invited paper, “Potential environmental impacts in the Tsavo – Galana – Sabaki water shed and river system”.

40. Apr., 1994: Workshop on Traditional Techniques of Microclimate improvement, Nairobi, Kenya. Presented an invited paper, “The role of external cooperation in national capacity building”.
41. Sept., 1995: Workshop on Geochemistry Applied to Water Resources issues in Africa, Sodore, Ethiopia. Presented two papers: (1). “The significance of the study of mineral – water interaction kinetics and thermodynamics in understanding water quality”, and (2). “Some studies on pollution of natural waters in Kenya”.
42. Jan., 1996: Environment and Urban Development Training Project; Special topic workshop on Environmental Impact Assessment, Nakuru, Kenya. Invited Guest. Delivered the official opening address.
43. Apr./May, 1997: 5th Scientific Assembly of the International Association of Hydrological Sciences, Rabat, Morocco. Presented a paper, “Pollution of groundwater in Coastal Kwale district, Kenya”.
44. Sept., 1997: Workshop for project and task coordinators, Lake Victoria Environmental Management Project, Kisumu, Kenya. Presented a paper, “Capacity building at Moi University”.
45. Jan., 1998: Seminar on the Kenya National Environment Action Plan (NEAP), Nairobi, Kenya.
46. Apr., 1998: Workshop on Research and Training needs for the Lake Victoria Environmental Management Project, Kericho, Kenya. Workshop Convenor.
47. Sept., 1998: UNDP Seminar on Capacity 21, Kenya’s response to Agenda 21, Mombasa, Kenya.
48. Oct./Nov., 1998: IAEA training course on Quality Assurance in isotope hydrology laboratories, Vienna, Austria.
49. Oct., 1999: Workshop on implementation of the Lake Victoria Environmental Management Project, Mwanza, Tanzania
50. Nov. 1999: Coast Ecology II Conference, Mombasa Kenya. Co presenter of 5 papers; (1) Karanja, F. K. and Tole, M. P., "Available trace metal concentrations and distribution in mangrove sediments, Ngomeni, Kenya. (2). Mdodo, R. M., Tole, M. P., Obura, D., and Muthiga, N. "Environmental factors affecting coral bleaching in Kenya during the 1997/98 ENSO event". (3). Munyao, T. M., Tole, M. P., and Jungerius, P., "Sabaki River sediment transport and deposition in the

Indian Ocean". (4). Muthini, M., Tole, M. P., and Otieno, D., "Solid waste pollution loads in beach hotels in Kwale and Mombasa districts". (5). Mwakumanya, M., Tole, M. P., and Odhiambo, B. D. O., "Coastal erosion in Kenya: hydrodynamic factors affecting Nyali and Bamburi beaches".

51. May/June 2000: World Geothermal Congress 2000, Japan. Co-presenter of two posters; (1) Tole, M. P., and Simiyu, G. M. "Concentrations of trace elements in waters, soils, and plants of the Olkaria geothermal field, Kenya.", (2) Tole, M. P., and Marani, M. "Concentrations of H₂S in air around the Olkaria geothermal field, Kenya."
52. Sept. 2000 LOICZ Workshop, Zanzibar, Tanzania. Presented a paper, "Nutrient budget modelling for the Sabaki Estuary, Malindi, Kenya".
53. November 2000 Workshop on promoting best practices for conservation, management, and sustainable use of water resources in the south, Trieste, Italy. Co-Presenter of a paper, "Use of constructed wetlands to treat wastewater in tropical countries: the case of the Carnivore/Splash constructed wetland, Nairobi, Kenya".
54. March 2001 Workshop on Isotopic and Geochemical Techniques in Geothermal Exploration and Reservoir Management, Manila and Cebu City, Philippines. Presented a paper, "Stable isotope compositions of some low enthalpy geothermal systems in Kenya".
55. July 2001 LOICZ/UNEP Regional Synthesis Workshop for the Africa - Europe Region. The Hague, the Netherlands. Presented a paper, "Classification of the East African Coast using the LOICZ typology modelling tool".
56. December 2001 1st Regional Lake Victoria Environmental Management Project Scientific Conference. Kisumu, Kenya. Co presenter of a paper, "Factors contributing to delays in completion of postgraduate programs in East African Universities."
57. February 2002 3rd Great Lakes of the World (GLOW III) Conference. Arusha, Tanzania. Co presenter of a paper, "Concentrations of heavy metals in water, fish, and sediments of the Winam Gulf, Lake Victoria, Kenya".
58. March, 2002 IAEA/KenGen Scientific Conference on isotope hydrology in geothermal reservoir management, Nairobi, Kenya. Co presenter/presenter of 3 papers:
1. "Removal of acidity, alkalinity, and selected heavy metals in the infiltration ponds at Olkaria east geothermal power station."

2. “Isotope hydrology and its development in Kenya” – Invited Lecture
 3. “Environmental Impact Assessment study of the Orpower4 Inc. Olkaria III geothermal development.”
59. April, 2003 2nd KenGen Geothermal Conference, UNEP Headquarters, Nairobi, Kenya. Co-presenter of 2 papers:
1. “Concentration of selected metals in soils and grass and health implications for grazing wild animals in Hell’s Gate National Park, Kenya”, with G. M. Simiyu and T. C. Davies.
 2. “Outflow of Lake Naivasha based on stable isotope composition of groundwater”, with M. K. Arusei and J. K. Sanga.
60. April, 2003 Eastern Africa Geothermal “Market Acceleration” Conference, UNEP Headquarters, Nairobi, Kenya.
61. October, 2003 3rd Lake Victoria Environmental Management Project, Capacity Building Component Scientific Workshop, Busia, Kenya.
62. November, 2003 African Regional Review Workshop for Lake Basin Management. Nairobi, Kenya. Chairman, Session Briefs on Lakes Naivasha, Nakuru, and Baringo.
63. April, 2004 3rd KenGen Geothermal Conference, Nairobi, Kenya
64. June, 2004 East African Community/ African Centre for Technology Studies Workshop to Review Draft Guidelines for Environmental Assessment in Shared Ecosystems. Nairobi, Kenya.
65. August, 2004 East African Community/ African Centre for Technology Studies Workshop to Finalise Draft Guidelines for Environmental Assessment in Shared Ecosystems. Arusha, Tanzania.
66. September, 2004 UNEP/NEPAD Workshop. Presented an invited paper, “Environmental policy in Africa”
67. November, 2004 UNESCO Africa Sub – Regional seminar on the Implementation of the Science Agenda – Framework for Action, Nairobi, Kenya. November 22 – 24, 2004. Presented an invited paper, “Science, Environment, and Sustainable Development”
68. April, 2005 ERB Environmental, Health and Safety policy for the Electric Power Sub-sector in Kenya. Safari Park Hotel, Nairobi, Kenya. Invited Discussant.

69. April 2005 Climate Change and Development in Kenya. World Agroforestry Centre, Nairobi, Kenya. Chairman of session on Case Studies.
70. May 2005 Workshop on preparation of the Kenya wetland policy. Nakuru, Kenya.
71. May 2005 Inception Workshop for Lessons Learnt Reports on the Lake Victoria Environmental Management Project, Kisumu, Kenya.
72. July 2005 National workshop for Lessons Learnt Reports on the Lake Victoria Environmental Management Project, Kisumu, Kenya
73. August 2005 First regional meeting of the UNEP – GEF WIOLaB water, sediment, and biota quality assessment working group, Durban, South Africa.
74. September, 2005 Regional workshop for Lessons Learnt Reports on the Lake Victoria Environmental Management Project, Jinja, Uganda.
75. November 2005 Thematic workshop meeting African Environmental Outlook (AEO) The City of Nairobi Outlook Report, Nairobi, Kenya.
76. November 2005 Regional workshop for Lessons Learnt Reports on the Lake Victoria Environmental Management Project, Arusha, Tanzania.
77. February 2006 Second regional meeting of the UNEP – GEF WIOLaB water, sediment, and biota quality assessment working group, Gold Crest Hotel, Mauritius.
78. April, 2006 National Workshop on preparation of Project Document for Phase II of the Lake Victoria Environmental Management Project, Kisumu, Kenya.
79. May, 2006 Coastal Ecology Conference IV, Plaza Beach Hotel, Mombasa, Kenya.
80. Jan/Feb 2007 Workshop on Certified Coffee production and its impacts on workers. University of Leiden, Netherlands. Invited Discussant
81. March, 2007 Workshop on the WIOLaB project on water, sediment and biota quality assessment and monitoring, Mombasa, Kenya. Workshop Chairman.
82. July 2007 The Third Regional Meeting on Water, Biota and Sediment Quality Assessment and Monitoring Working Group of WIOLaB, Maputo, Mozambique. Elected Chairman of the meeting.

83. November 2007 Workshop on the Assessment of the Level of Implementation of the Integrated Water Resources Management in the Nile Basin Countries. Cairo, Egypt. Invited Expert Participant.
84. January 2008 Workshop on Certified Coffee production and its impacts on workers and the environment. University of Addis Ababa, Ethiopia. Invited Discussant
85. February 2008 Workshop on Review of EIA/EA Regulations for Coast Province. Mombasa, Kenya
86. March 2008 National Workshop on Review of EIA/EA Regulations, Nairobi, Kenya. Presented a paper, “Summary of (EIA/EA) Issues Raised during Public Consultations”
87. March 2008 Workshop on Review of EIA/EA Regulations, Mombasa
88. March 2008 Regional Workshop on Regional CBNRM Learning Linkages Project, Nairobi, Kenya. Presented a paper, “Tiomin and Arabuko Sokoke Forest”
89. May 2008 1st National Conference on the Environment, Nairobi, Kenya. Chairman of the Organising Committee.
90. July 2008 Regional Workshop on CBNRM Project, Kabale Uganda. Chairman of Session.
91. August 2008 Workshop of the Drafting Team of the Strategic Action Plan (SAP) for the Western Indian Ocean (WIO), Mombasa, Kenya. Facilitator for the Water and Sediment Quality component.
92. September 2008 Regional Workshop on CBNRM Project, Nairobi, Kenya. Presented a paper, “Case Study of Arabuko Sokoke Forest”
93. October 2008 Regional Workshop of the WIOLaB Municipal Waste Water Task Force, Nampula, Mozambique. Session Facilitator
94. November 2008 Regional Workshop on the Strategic Action Plan (SAP) for the Nairobi Convention, Cape Town, South Africa. Session Facilitator
95. December 2008 Regional working group meeting for the Strategic Action Plan (SAP) for the Nairobi Convention, UNEP Headquarters, Nairobi. Produced the SAP for Water Quality in the Western Indian Ocean
96. June 2009 Regional Workshop on the final negotiations meeting on the LBSA protocol, revised text of Nairobi Convention, and Strategic Action

- Plan (SAP) for the Nairobi Convention, Mombasa, Kenya. Session Facilitator
97. June 2009 4th Regional Meeting of the Water and Sediment Quality Monitoring Working Group for the WIOLaB Region, Dar es Salaam, Tanzania. Presented the SAP for the Water Quality for the WIO Region.
98. December 2009 Extraordinary meeting of the WIOLaB Project Steering Committee, Diani, Mombasa Kenya. Invited Expert. Presented a Project Concept Note.
99. Mar/Apr 2010 Sixth meeting of the Conference of Parties (COP6) to the Nairobi Convention, UNEP Headquarters, Nairobi. Invited Expert. Presented the SAP to the Conference of Parties delegates.
100. July 2011 Regional Training Course on Data Interpretation and Monitoring of Project Progress following First Sampling Campaign, Arusha, Tanzania. Co- lecturer for the course with Dr. Halldor Armannson.
101. July 2011 European Report on Development Consultative Meeting 2011/2012: Effective natural resource management for inclusive and sustainable growth in the context of increased scarcity and climate change: what role for the public and private sector? Crowne Plaza Hotel, Nairobi. Invited presenter of a paper: “The role of renewable energy for inclusive and sustainable growth focusing on geothermal energy”.
102. March 2012 Policy validation workshop on Education for Sustainable Development (ESD), Multimedia University College, Nairobi, Kenya. Chairman of Working Session 3.
103. May 2014 Closing Workshop of the IGCP/SIDA Projects 594 and 606, Prague, Czech Republic, May 26—28, 2014
104. August 2015 Workshop on Application of Climate Risk Screening Decision Tree to Mwache Dam, Kenya, Diani, Kenya.
105. December 2017 Meeting of the Forum for Academic and Research institutions (FARI) of the Western Indian Ocean (WIO) Region, Zanzibar
106. July 2018 Science to Policy Forum for the UNEP/Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean, Durban, South Africa

PUBLICATIONS:

(a) Refereed Publications:

1. Tole, M. P. (1984). Some implications of the role of kinetics in enhancing element transport. *In* Erikson, E. (Ed.). *Hydrochemical Balances of Freshwater Systems*. IAHS Publication No. 150, pp. 79 – 86.
2. Mathu, E. M. and Tole, M. P. (1984). Geology of the Ithanga Hills area. *Journal of African Earth Sciences* Vol. 2 pp. 10 – 16.
3. Tole, M. P. (1985). The kinetics of dissolution of zircon ($ZrSiO_4$). *Geochimica et Cosmochimica Acta* Vol. 49 pp. 452 – 458.
4. Tole, M. P. (1985, Editor). *Geology for the Development of Kenya*. Proceedings of the 1st Conference on the Geology of Kenya. Geological Society of Kenya, Publication No. 2 76 pp., Nairobi.
5. Tole, M. P. (1985). Thermodynamic and kinetic aspects of formation of bauxites *in* Ogura, Y. (Ed.). *International Seminar on Laterite*. Mining and Metallurgical Institute of Japan, pp. 249 – 261.
6. Tole, M. P. (1985). Geochemical studies of the geothermal area east of the Jombo hill intrusion, Coast Province, Kenya – 1. Hot water reservoir temperatures. *Kenya Journal of Science and Technology series A*. Vol. 6 pp. 91 –101.
7. Tole, M. P., Lasaga, A. C., Pantano, C., and White, W. B. (1986). The kinetics of dissolution of nepheline ($NaAlSi_3O_8$). *Geochimica et Cosmochimica Acta* Vol. 50 pp. 379 – 392.
8. Tole, M. P. (1987). Thermodynamic and kinetic aspects of formation of bauxites. *Chemical Geology* Vol. 60 pp. 95 – 100.
9. Tole, M. P., Mathu, E. M., and Ichang'i, D. W. (1987). The source of the Yatta phonolite - evidence from phenocryst elongations. *Kenya Journal of Science and Technology Series A*. Vol. 8 pp. 113 – 115.
10. Tole, M. P. (1987). The chemistry of the “sweet” waters of Kiangua, North West of Chogoria, Meru district. *Kenya Journal of Science and Technology Series A* Vol. 8 pp. 117.
11. Tole, M. P. (1988). Low enthalpy geothermal systems in Kenya. *Geothermics* Vol. 17 pp. 777 – 783.
12. Dobrovolsky, E. and Tole, M. P. (1988). (in Russian). The peculiarities of the kinetics of zircon dissolution in view of radioactive elements content. *Geological Journal* Vol. 6(88) pp. 72 – 78.

13. Tole, M. P. (1989). Environmental effects of energy generation and utilisation: geothermal power. Proceedings of the Symposium on environmental pollution and its management in eastern Africa, Dar es Salaam. Pp.81 – 89.
14. Tole, M. P. (1990). Present day ore deposition in the geothermal systems of Kenya: I. the Mwananyamala hot springs, north east of Jombo hill. Coast Province. Geothermics Vol. 19(2) pp.233 – 239.
15. Tole, M. P. (1990). Stable isotope studies of some low enthalpy geothermal systems in Kenya. Journal of African Earth Sciences Vol. 11(1 – 2) pp.33 – 37.
16. Tole, M. P. (1990). Chemical geothermometry and resource potential of low enthalpy geothermal systems in Kenya. Transactions of the Geothermal Resources Council Vol. 14 Part 1. Pp.187 – 194.
17. Tole, M. P. (1990). Environmental effects associated with the use of geothermal energy. Discovery and Innovation Vol. 2(3) pp. 21 – 26.
18. Tole, M. P. (1990). Mineral and thermal waters of Kenya – an update. Proceedings of the 15th Colloquium on African geology, Nancy.
19. Tole, M. P. (1992). Geothermal and Solar Energy for Sustainable Development in Africa – Possibilities and Dangers. In Lopes, H.; Jergman, K.; and Aswathanarayana, U. (Eds., 1992). Environment, Technology and Sustainable Development. Proceedings of the “Africa International Conference, Maputo, Mozambique, Nov. 25 – 29, 1991. Pp. 139 – 147.
20. Tole, M. P. (1992). Geochemical studies of the geothermal systems of Kenya I. The Homa Mountain geothermal system. Discovery and Innovation Vol. 4(3) pp. 23 – 29.
21. Tole, M. P. (1992). Geochemical studies of the geothermal systems of Kenya II. The Majimoto geothermal system. Journal of African Earth Sciences Vol. 14(3) pp.387 – 391.
22. Tole, M. P. (1992). Comment on “kinetics of quartz dissolution in electrolyte solutions using a hydrothermal mixed flow reactor”. Geochimica et Cosmochimica Acta Vol. 56 pp. 4091 – 4092.
23. Tole, M. P., Armannsson, H., Arnorsson, S., and Zhong he, P. (1993). Fluid/mineral equilibrium calculations for geothermal fluids and chemical geothermometry. Geothermics Vol. 22(1) pp. 17 – 37.
24. Kunguru, K. K. and Tole, M. P. (1994). Contamination of soils, maize, wheat and milk with lead from motor vehicle emissions in Uasin Gishu district, Kenya. Discovery and Innovation Vol. 6(3) pp.261 – 264.

25. Tole, M. P. (1995). The role of external cooperation in national capacity building. Chapter 8 *in* Stigter, C. J., Wangati, F. J., Ng'ang'a, J. K., and Mungai, D. N. (Eds.) "The TTMI Project and the 'Picnic' model". Proceedings of the TTMI Workshop , Nairobi, April 1994. Wageningen Agricultural University, Wageningen, The Netherlands.
26. Tole, M. P. (1996). Geothermal energy research in Kenya: a review. *Journal of African Earth Sciences* Vol. 23(4) pp. 565 – 575.
27. Tole, M. P. (1997) (Ed.). *Environmental Impact Assessment in Kenya: Theory and Practice*. Proceedings of the Environmental Impact Assessment Seminar, July/August 1996. Academy Science Publishers, Nairobi 89pp.
28. Tole, M. P. (1997). Environmental Impact Assessment of Geothermal Energy Projects in Kenya. *In* Tole, M. P. (1997) (Ed.). *Environmental Impact Assessment in Kenya: Theory and Practice*. Proceedings of the Environmental Impact Assessment Seminar, July/August 1996. Academy Science Publishers, Nairobi 89pp.
29. Tole, M. P. (1997). Pollution of groundwater in the Coastal Kwale District, Kenya. *International Association of Hydrological Sciences Publication No. 240* pp. 287 – 297. IAHS Wallingford.
30. Anyango, S. O., Tole, M. P., and Ucakuwun, E. K. (1998). Groundwater resources and sea water intrusion in Kwale district. *In* Hoorweg, J. (1998) (Ed.). *Dunes, Mangroves, and Birdlife in Coastal Kenya*. ACTS Press, Nairobi pp. 73 – 84.
31. Mzuga, J. M., Tole, M. P., and Ucakuwun, E. K. (1998). The impact of geology and pit latrines on groundwater quality in Kwale district, Kenya. *In* Hoorweg, J. (1998) (Ed.). *Dunes, Mangroves, and Birdlife in Coastal Kenya*. ACTS Press, Nairobi pp. 85 – 96.
32. Simiyu, G. M. and Tole, M. P. (2000). Concentrations of trace elements in waters, soils, and plants of the Olkaria geothermal field, Kenya. *Proceedings of the World Geothermal Congress, Japan*. CD ROM Proceedings.
33. Marani, M., Tole, M. P., and Ogallo, L. J. (2000). Concentrations of H₂S in the air around the Olkaria geothermal field, Kenya. *Proceedings of the World Geothermal Congress, Japan*. CD ROM Proceedings.
34. Marani, M., Tole, M. P., and Ogallo, L. J. (2000). Concentrations of H₂S in the air around the Olkaria geothermal field, Kenya. *Discovery and Innovation* Vol. 12 (3/4) pp. 169-178
35. Tole, M. P. (2000). Current Environmental Problems. Chapter 5 *in* Hoorweg, J., Foeken, D., and Obudho, R. A. (Eds.). *Kenya Coast Handbook: Culture, resources and development in the East African littoral*. LIT Verlag, Munster, Pp. 61 - 72.

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4. Tole, M. P. (1989). Geothermal Energy. First Annual Research Workshop on Meteorological Applications and Services, September, 1989, Nairobi, Kenya.
5. Tole, M. P. (1994). Potential Environmental impacts in the Tsavo – Galana – Sabaki water shed and river system. Workshop on the Environmental Impact Assessment of the Second Mombasa and Coastal Water Supply Engineering and Rehabilitation Project, April, 1994, Tsavo, Kenya.
6. Tole, M. P. (1994). The role of External Cooperation in Capacity Building. Workshop on Traditional Techniques of Microclimate Improvement Project, April, 1994, Nairobi, Kenya.
7. Tole, M. P. (1996). Official Opening Address, Environment and Urban Development Training Project; Special topic workshop on Environmental Impact Assessment, January, 1996, Nakuru, Kenya.
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RESEARCH INTERESTS:

1. Environmental Impact Assessment.

2. Waste Management.
3. Water Resources Quality and Management
4. Geothermal Energy Resources.
5. Kinetics/Thermodynamics of Water/Rock Interaction.
6. Environmental Education.

SUPERVISION AND EXAMINATION OF POSTGRADUATE THESES.

(a). Supervisor/Co - Supervisor of 48 Masters and 15 Doctoral theses as follows:

1. Onacha, S. A. (1989). An electrical resistivity study of the area between Mt. Suswa and the Olkaria geothermal field, Kenya. MSc. Thesis, University of Nairobi, 1989, 177 pp.
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14. Kebeney, J. K. (1997). The effects of tannery effluents on water quality of river Kasarani, Nairobi, Kenya. MPhil. Thesis, Moi University, 1997.
15. Nzeng'ya, D. (1997). Benthic macroinvertebrate fauna of a constructed wetland of Carnivore restaurant, Nairobi, Kenya. MPhil. Thesis, Moi University, 1997.
16. Karanja, F. (1998). Ecological studies of mangrove forests on tidal flats and lagoons, Ungwana bay, Kenya coast. MPhil. Thesis, Moi University, 1998.
17. Nyaora – Moturi, W. K. (1998). The contribution of drinking water to dental fluorosis: a case study of Njoro division, Nakuru district, Kenya. MPhil thesis, Moi University, 1998.
18. Ndagijimana, A. (1999). The impact of Eldoret municipal effluents and agricultural activities on Sosian river: Public health aspects. MPhil. Thesis, Moi University, 1999.
19. Shitsama, J. M. (1999). Bioaccumulation of heavy metals contaminants in *Lates niloticus*, *Rastineobola argentea*, and *Oreochromis niloticus* in lake Victoria (Kenya). MPhil. Thesis, Moi University. (1999).
20. Mdodo, R. M. (1999). Environmental factors responsible for coral reef bleaching in Kenya. MPhil. Thesis, Moi University. (1999).
21. Gitahi, S. M. (1999). Organochlorinated and organophosphorus insecticide concentrations in water, sediment, and selected organisms in Lake Naivasha (Kenya). MPhil. Thesis, Moi University. (1999).
22. Gatubu, L. W. (1999). Concentration of heavy metals in fresh fruits and vegetables arising from motor vehicle emissions. MPhil. Thesis, Moi University (1999).
23. Mwakumanya, M. (2000). The impact of waves on beach morphology in Nyali and Kenyatta beaches, Mombasa. MPhil. Thesis, Moi University (2000).
24. Mogere, S. N. (2000). Morphological stability in *Chironomus* (Diptera: Chironomidae) for pollution monitoring along river Nzoia. MPhil. Thesis, Moi University. (2000).

25. Nzyuko, D. M. (2000). Contamination of river Nzoia by alachlor, metalochlor, and their degradation products. MPhil. Thesis, Moi University, (2000).
26. Muthini, M. (2000). Solid waste pollution loads in beach hotels in Mombasa and Kwale districts, Kenya. MPhil. Thesis, Moi University (2000).
27. Otieno, E. O. (2001). Ground water quality in Kisumu town. MPhil. Thesis, Moi University, (2001).
28. Wesonga, T. E. O. (2001). Levels of heavy metals and some preservatives in milk and milk products under a liberalised market. MPhil. Thesis, Moi University (2001).
29. Kirui, A. (2002). Pathogenic microorganisms and water quality of Nyando river and its wetlands in Lake Victoria basin. MPhil. Thesis, Moi University (2002).
30. Oluchiri, S. (2002). The use of municipal wastes in energy generation: the case of Eldoret and Kisumu Municipalities. MPhil. Thesis, Moi University (2002).
31. Koech, W. K. (2003). Assessment of water quality parameters and selected metals of Dionsoyiet River, Kericho municipality. M.Phil Thesis, Moi University (2003).
32. Nyagah, E. M. (2006). A numerical model for determining the dispersion of hydrogen sulphide plume from a stationary point source (Olkaria geothermal power station, Kenya). MSc Thesis Kenyatta University, (2006).
33. Mzuga, J. M. (2007). The impact of geology and pit latrines on ground water quality: a case study of boreholes in Kwale district. MPhil. Thesis, Moi University (2007).
34. Mutisya, D. K. (2008). The impact of irrigated agriculture on river water quality: a case study of Ontulili subcatchment of Ewaso Ng'iro North Basin. MES Thesis, Kenyatta University, (2008).
35. Mahungu, R. M. (2008). Trace element concentrations in vegetables grown using sewage waters in Nairobi, Kenya MES Thesis, Kenyatta University (2008)
36. Masaku, Margaret K. (2008). Solid Waste Management Practices in Urban Municipalities in Kenya: a case study of Machakos Town. MES Thesis, Kenyatta University, (2008).
37. Kombe, F. K. (2009). A Study of Waste Generation and Management for both Ship and Offshore Operations at the Port of Mombasa, Kenya. MPH Thesis, Kenyatta University. (2009).

38. Njiru, Sophy Njoki (2012). Numerical simulation of spatial and temporal variations in concentration of lead in a riverine system using the mass transport model. MSc. Thesis, Kenyatta University, (2012).
39. Maina, B. (2012). Assessment of the utilisation of wind energy in areas around Thika, Laikipia, and Kajiado Divisions of Kenya. MES Thesis, Kenyatta University, (2012).
40. Mwatsahu, Salim (2013). Status of heavy metals in water, sediments, and fauna of selected areas of the Kenyan Coastline. MSc Thesis, Kenyatta University (2013).
41. Owino, Thomas Juma (2014). The impacts of dump-site and domestic waste leachate on groundwater quality in Kilifi Town, Kilifi County, Kenya. M. Env. Sci., Kenyatta University (2014).
42. Tunje, Mwamuye Pole (2014). Impact of anthropogenic pollutants on productivity of the coastal marine waters of Mtwapa, Mida and Kilifi creeks, Kilifi County, Kenya. M. Env. Sci., Kenyatta University (2014).
43. Kilwake, Joseph (2016). Assessment of water quality in boreholes and wells in Waa loction, Kwale County, Kenya. M. Env. Sci., Pwani University (2016)
44. Bett, David (ongoing). Impact of ring net fishing on fish species and their habitats in Kilifi inshore marine waters, Kenya. M. Env. Sci. thesis, Pwani University (ongoing).
45. Mwakileo, Bakari (ongoing). Renewable energy use in the KISCOL plant, Kwale County, Kenya. M. Env. Sci., Pwani University, Kenya (ongoing).
46. Menza, Chai (ongoing). Poverty among artisanal fishers and the sustainability of the marie fisheries along Kilifi Creek, Kilifi County. M. Env. Sci. thesis, Pwani University (ongoing).
47. Kiarie, Esther (ongoing). The potential of biogas energy in Kenya: case study of the Kilifi Plantation biogas plant in Kenya. M.Env. Sci. thesis, Pwani University (ongoing).
48. Wafula, Godfrey (ongoing). Assessment of the influence of industrial effluent on the performance of Mavoko Sewer treatment ponds, Machakos County, Kenya. M. Env. Sci. thesis, Pwani University (ongoing).
49. Abuodha, J. O. Z. (2000). Geomorphology and sedimentology of the area influenced by the Sabaki sediments: implications for dune dynamics. PhD. Thesis, University of Amsterdam (2000).

50. Simiyu, G. M. (2000) Levels of selected trace elements in the Olkaria geothermal field, and their potential toxicity to resident grazing wild animals in Hell's Gate national park, Kenya. DPhil. Thesis, Moi University (2000).
51. Munyao, T. M. (2001). Sedimentology of the Sabaki river sediments in the Malindi - Mamburui area, coastal Kenya. DPhil. Thesis, Moi University (2001).
52. Arusei, M. (2002). The hydrology of Lake Naivasha basin from stable isotope studies: implications for the environment and geothermal power generation. DPhil. Thesis, Moi University (2002).
53. Madara, D. S. (2007). A case study on cleaner production potential at Rupa Woolen Textile Mill, Eldoret, Kenya. DPhil. Thesis, Moi University (2007).
54. Gathuru, G. (2011). Rehabilitation of mine sites at East African Portland cement, Athi River, Kenya. PhD thesis, Kenyatta University (2011).
55. Ojok, J. (2011). Municipal Solid Wastes Management Challenges and Opportunities: A case of Kampala city, Uganda. PhD thesis, Kenyatta University (2011).
56. Akunga, Beatrice G. (2015). The impact of climate change on fisheries on the Kenyan Coast. PhD thesis, Kenyatta University (2015).
57. Maghanga, Justin K. (2014). Biosorption of textile dyes using low cost adsorbents: equilibrium uptake and sorption dynamics. D.Phil thesis, Moi University (2014)
58. Okuku, Eric (2014). The role of water reservoirs in Carbon cycling and biogeochemical functioning of tropical rivers: Case study of river Tana, Kenya. PhD thesis, Katholieke Universiteit Leuven, and Vrije Universiteit Brussels (2014).
59. Tunje, Joseph (2017). Fisheries resource use conflicts at the Kenyan Coast. PhD thesis, Pwani University (2017).
60. Nyinge N. Mwadzombo (ongoing). Pollution assessment of selected organometallic derivatives, organochlorine and organophosphates along the Kenyan Coastal marine environment using coral reefs as environmental indicator. PhD thesis, Pwani University (Ongoing)
61. Wanyonyi, Geoffrey Ingubo (ongoing). An analysis of opportunities for energy efficiency improvement and reduction of greenhouse gas emissions in Kenya's manufacturing sector: a case of Pwani oil Products Ltd. PhD thesis, Pwani University (Ongoing).
62. Odongo, Anthony Odenyo (Ongoing). Modelling of groundwater potential of Ngomeni sand dune catchment in Malindi, Kenya. PhD thesis, Pwani University (ongoing).

63. Owuor, Collins (Ongoing). Identification of groundwater artificial recharge sites in coastal aquifers of the Coast Province of Kenya by integration of geophysical, geochemical and geoinformation tools. PhD thesis, Pwani University (Ongoing).

(b). Served on the boards of examiners for over 120 Masters and 20 doctoral theses, either as supervisor, examiner, or Chairman of the Board of Examiners.

(c). Reviewing of Publications for Journals/Conferences /Publishers/Funding Agencies and Editorial Board member.

1. Kenya Journal for Science and Technology Series A. Physical and Chemical Sciences

2. Discovery and Innovation

3. University of Nairobi Press

4. Applied Geochemistry

5. Journal of African Earth Sciences

6. International Science Foundation (USA)

7. African Journal of Science and Technology

8. Environmental Geochemistry and Health

9. African Environmental Review

10. Tanzania Journal of Science

11. Ambio

12. Estuarine Coastal and Shelf Science

13. Journal of East African Natural Resources Management

14. International Foundation for Science (Sweden)

15. Africa Geoscience Review

16. Journal of the Kenya Chemical Society

17. Egerton Journal: Science and Technology Series

18. Water Science and Technology

19. International Water Association
20. Intergovernmental Panel on Climate Change (IPCC) Working Group II Fourth Assessment Report
21. World Health Organisation (WHO)
22. Water, Air, & Soil Pollution
23. African Journal of Agricultural Research
24. Baraton Interdisciplinary Research Journal
25. Journal of Geochemical Exploration
26. Environment and Natural Resources Journal
27. CRC Press
28. Sustainable Food Production

(d). Developing Curricula at University Level:

Described courses in geochemistry and geological thermodynamics at the Department of Geology, University of Nairobi. Revised and updated several undergraduate and postgraduate courses at the same institution. Described 18 post graduate courses in Physical Sciences at the School of Environmental Studies, Moi University, and an undergraduate course in geochemistry at the Department of Chemistry, Moi University. Revised and introduced new curricula at Kenyatta University, Department of Environmental Sciences.

(e). External Examiner for University Programmes:

1. University of Nairobi, Department of Geology, 1993.
2. University of Manchester, Department of Earth Sciences (PhD Thesis), 1995
3. University of Nairobi, Department of Meteorology (PhD Thesis), 1999.
4. University of Zambia (MSc Thesis), 2000
5. University of Dar es Salaam (MSc Thesis), 2001, 2004, 2008
6. Maseno University, Department of Environmental Studies, 2002 – 2008
7. Egerton University, Department of Environmental Science, (2003 – 2012)

8. Makerere University (MSc Thesis), 2004
9. University of Nairobi, Department of Geology (2006 – 2007)
10. Moi University, Faculty of Science (MPhil Thesis), 2007, 2009
11. Egerton University, Department of Environmental Science, 2007 (3 Masters, 2 PhD)
12. Jomo Kenyatta University of Agriculture and Technology (Masters Thesis), 2008
13. South Eastern University College Department of Geology (2010 – 2014)
14. Makerere University Department of Geology (2012 - 2014)
15. Chepkoilel University College (PhD Thesis), 2012
16. University of Venda, South Africa (PhD Thesis), 2012
17. Dedan Kimathi University of Technology (Masters thesis – 2016)

(f). External Examination of Other Programmes:

1. Kenya Wildlife Service Training Institute, Diploma in Environmental Management 2005 – 2008.

(g). External Review of papers for promotions to Professorial appointments

1. University of Dar es Salaam, Tanzania (2004; 2010; 2011; 2012)
2. ARDHI University, Tanzania (2010)
3. Federal University of Agriculture Abeokuta, Nigeria (2013)
4. National University of Lesotho

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3. Prof. Theophilus Clavell Davies, Professor, Department of Mining and Environmental Geology, University of Venda, Private Bag X5050, Thohoyandou 0950, Limpopo Province, Republic of South Africa. Email: daviestheo@hotmail.com; theo.clavellpr3@gmail.com.

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