**Press Release: Honoring Dr. Rafik Hirji's Visionary Leadership and Exemplary Contributions, Keynote Address, and Recommendations from the 4th International MAJI Scientific Conference.**

Date: February 4, 2025



His Excellency Dr. Philip Mpango, Vice President of Tanzania, recognizes Dr. Rafik Hirji for his distinguished career, visionary leadership, and outstanding global, regional, and national contributions.

**Celebrating Visionary Leadership and Exemplary Contributions**. On January 29, 2025, during the inaugural session of the Fourth International MAJI Scientific Conference held at Mlimani City, His Excellency Dr. Philip Mpango, the Vice President of Tanzania, presented Dr. Rafik Hirji, our keynote speaker, with a plaque inscribed with the words, "With Our Deepest Appreciation." This recognition from the Government of Tanzania acknowledged Dr. Hirji's exceptional and impactful contributions and his 38-year career advancing international development policies and practices to build climate resilience.

His visionary leadership has greatly improved our understanding of water resources and environmental management. He has led innovations, developed comprehensive policies and legal frameworks, and enhanced the institutions responsible for managing water resources. Recognized as a leading integrated lake basin management authority, Dr. Hirji has actively promoted and facilitated transformative investments to tackle global, regional, and national water, ecosystems, and climate change challenges.

**Keynote address.** Dr. Hirji delivered a keynote address titled "Enhancing Climate Resilience: Developing Integrated Management Capacity for Lakes and Reservoir Basins in Africa" at the Fourth International MAJI Scientific Conference. The event was attended by the Guest of Honor, Dr. Philip Mpango, Vice President of the United Republic of Tanzania, along with Minister of Water Jumaa Aweso and other dignitaries.

This three-day conference, hosted by the Water Institute of the Ministry of Water focused on the theme "Water and Sanitation Solutions Amidst Climate Change." In his speech, Dr. Hirji advocated for the establishment of a regional center in Tanzania aimed at fostering integrated management capacity for lake and reservoir basins across Africa. He emphasized his multiagency supported global work in integrated lake basin management published in two major reports: "Managing Lakes and Their Basins for Sustainable Use: A Report for Lake Basin Managers and Stakeholders" (ILEC, 2005) and "Lessons for Managing Lake Basins for Sustainable Use" (World Bank, 2005). Various organizations supported this work, including the GEF, The World Bank, UNEP, UNDP, USAID, The Ramsar Secretariat, ILEC, LakeNet, and Shiga Prefecture. Both reports feature in the prestigious journal \*Water Policy\* in 2025 and remain definitive resources in the field, even two decades later.

Rafik was born in Lindi and holds a Bachelor of Science in Civil Engineering from the University of Dar es Salaam. He also earned a Master of Science in Environmental Engineering and Science and a Doctorate in Water Resources Planning from Stanford University. Currently, he is a licensed civil engineer in California and resides in Maryland, USA.

His career began in the fluoride belt of Northern Tanzania, where he worked on the Mto wa Mbu, Mwanga, and Arusha water supply projects from 1981 to 1983. After completing his Ph.D., he published four articles based on his doctoral research, focusing on Kenya's water resources and environmental planning in peer-reviewed journals. From 1989 to 1993, he joined the water resources team at a California engineering firm, where he supported the development of the first conjunctive use model for managing surface and groundwater in California's Central Valley and addressing groundwater quality, flood management, and water supply issues.

**A twenty-four-year career at the World Bank**. In 1993, he joined the World Bank, where he collaborated with various teams and supported and led numerous global initiatives until his retirement in 2017. From 1993 to 2013, Dr. Hirji also supported and led numerous studies, strategies, and projects related to water supply, water resources, irrigation, hydropower, and environmental management in Tanzania.

**Global knowledge to advance global, regional and national water policy reforms.** Rafik has significantly contributed to improving water security in an environmentally sustainable way by integrating environmental factors and climate change into water resource policies, planning, and decision-making processes. His work integrates scientific knowledge with policies, legislative frameworks, institutional development, and community engagement. He has improved our understanding of African water resources.

Rafik was the team leader (and coeditor) of the following fourteen (14) World Bank ***Water Resources and Environment Technical Notes* series** (2003) prepared by leading experts:

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| * + *Environmental Flows* * Environmental Flow Assessment: Concepts & Methods * Environmental Flow Assessment: Selected Cases * Environmental Flow Assessment: Flood Flows * *Water Quality Management* * Water Quality Management: Assessment and Protection * Water Quality Management: Wastewater Treatment * Water Quality Management: Nonpoint Source Pollution * *Irrigation and Drainage* * Irrigation and Drainage: Development * Irrigation and Drainage: Rehabilitation | * *Water Conservation* * Water Conservation: Urban Utilities * Water Conservation: Irrigation * Water Conservation: Wastewater Reuse * *Waterbody Management* * Water Body Management: Lake Management * Water Body Management: Wetlands Management * Water Body Management: Management of Aquatic Plants |

***He is the lead author of a groundbreaking two-volume book about integrating environmental flows into water resource policies, planning, and projects*** published by the World Bank in 2009. It addresses the often-contentious aspects of water policy--environmental water allocation and sustainable dam development. It advances adopting environmentally sustainable policies and water, food, and energy security investments. Three of the seventeen best practice cases reviewed are Tanzanian cases (NAWAPO 2002, Pangani EFA, and Kihansi Final Water Right), with the book cover featuring the Kihansi dam and the bypass flow structure.

***He is the lead author of a two-volume report titled “Strategic Environmental Assessment (SEA): Improving Water Resources Governance and Decision Making: Main Report and Case Studies,”*** published by the World Bank in 2009. The report is based on 10 global case studies and includes a detailed review of water sector reforms in Tanzania. It provides lessons on how SEAs can enhance the implementation of Integrated Water Resources Management at higher levels of decision-making.

Dr. Hirji served as the lead editor and primary author, as well as a co-author of several chapters for the multi-agency ***SADC Technical Report titled "Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa."*** This two-volume multiagency report, published by SARDC-IMERSCA, was launched at the 2002 World Summit on Sustainable Development in Johannesburg.

Dr. Hirji's keynote address was based on a ***multi-agency project he led to advance integrated lake basin management under the Global Environment Facility (GEF).*** This project examined 28 case studies of lake basin management from around the world as part of a collaborative program supported by various organizations, including GEF, the International Lake Environment Committee (ILEC), LakeNet, Shiga Prefecture, the Ramsar Secretariat, UNDP, UNEP, USAID, and the World Bank. A total of 288 lake basin experts from 41 countries contributed to this effort, which featured eight case studies from Africa, including the three Great Lakes of the Rift Valley that are shared by Tanzania and its neighboring countries. A significant global framework, the 2022 UN Resolution on Sustainable Lake Management, emphasizes the critical role these resources play in adapting to climate change.

***Dr. Hirji has effectively advocated for an increased policy focus on enhancing global, regional, and national groundwater governance reforms***. In 2006, he conceived and 2008 launched the multi-agency Global Groundwater Governance Project funded by the GEF. This cooperative program received support from GEF, IAH, UN FAO, UNESCO, and the World Bank. Subsequently, FAO implemented a comprehensive review of national groundwater governance case studies, including five from India, Kenya, Morocco, South Africa, and Tanzania, prepared under Rafik's leadership. FAO delivered the final report in 2015. The United Nations' 2022 World Water Development Report on groundwater highlights the critical role of these resources in enhancing resilience against drought and climate change.

In addition, Rafik organized the ***South Asia Groundwater Forum***, supported by IWA, IWMI and other partners, to develop strategies for enhancing drought and climate resilience in this particularly vulnerable region. He served as the lead editor for the report titled "South Asia Groundwater Forum: Regional Challenges and Opportunities for Building Drought and Climate Resilience for Farmers, Cities, and Villages," which was published in 2017 by the International Water Association.

**Integrating climate change into water resources planning, development and management.** Rafik has pioneered the integration of climate change considerations into resource management at various levels. He has co-authored and led global reports that focus on the relationship between water and climate change and reports addressing groundwater issues related to climate change. Notably, he was part of the team that authored the World Bank flagship report "Water and Climate Change: Understanding the Risks and Making Climate-Smart Decisions" (Alavian et al., 2009). Additionally, he commissioned a comprehensive report by WWF on climate change and freshwater ecosystems. He served as the team leader and coauthor of the influential report on groundwater and climate change adaptation best practices.

***His work includes a paper on climate change and water resources management for Zimbabwe (Davis & Hirji, 2014) and South Asia (Hirji et al., 2017),*** the latter produced in collaboration with the International Water Management Institute (IWMI). These reports effectively integrate water, environmental, and climate policy reforms and investments, preparing for an uncertain future.

**Transformative policy reforms and water resources investments.** Rafik has played a pivotal role in advancing transformative policies and investments that significantly enhance climate resilience. He has successfully advised on the implementation of comprehensive policy, legislative, and institutional reforms, effectively integrating water management, environmental sustainability, climate adaptation, and infrastructure investments across India, Kenya, Tanzania, and Zimbabwe.

He has guided several major projects, including the water supply master plan for Dar es Salaam, which proposed the development of the Kidunda Dam and deep Kimbiji wells. He played a key role in the Lesotho Highlands Project Phase 1B, a transboundary inter-basin transfer scheme that expands the Gauteng water supply. He also led the development of the Nairobi water master plan and guided the Nairobi water supply expansion through the Northern Collector Phase 1, an inter-basin water transfer scheme.

Furthermore, his policy recommendations to the Government of India have led to $1 billion in reforms and investments in groundwater management, the largest World Bank investment in groundwater.

From 2011 to 2015, Rafik led and supported several technical assistance initiatives in Zimbabwe. These included the development of the 2012 National Water Policy and the Water Quality Strategy. He also co-authored an issue paper addressing climate change and water resource planning, development, and management, as well as a policy note outlining options for climate-resilient water resource planning and management for the new climate policy.

**Advancing IWRM reforms and water resources investments in Tanzania.** Dr. Hirji's visionary leadership has profoundly influenced the advancement of integrated water resources management reforms and the reshaping of the water sector in Tanzania. Washington Mutayoba, the former Head of the Water Institute and retired Director for Water Resources at the Ministry of Water, noted that “Rafik's leadership has been instrumental in (a) advocating for, championing and supporting a transformative water resources policy and planning framework, along with investments in essential water infrastructure in Tanzania, and (b) promoting integrated lake basin management on both global and local scales”.

Following the Mtera crisis of 1991-93, Former President Jakaya Mrisho Kikwete, who was then the Minister for Energy, Water, and Minerals, sought to address the water management challenges affecting agriculture and energy generation. The crisis was triggered by a severe drought, which resulted in low water flows in the Rufiji and Pangani basins, and low water levels at the Mtera and Nyumba ya Mungu dams. This led to acute conflicts over water needs for irrigation and hydropower generation, along with prolonged power shortages.

Rafik was part of a team from the World Bank and DANIDA that collaborated with the Government of Tanzania (GOT) to tackle these challenges. He planned, guided, and oversaw a multidisciplinary government initiative led by Chief Hydrologist Mr. Meraji Msuya. This initiative included representatives from various government agencies focused on urban and rural water supply, hydrology, irrigation, forestry, wetlands, the environment, and hydropower. Together, they conducted a strategic Rapid Water Resources Assessment (RWRA) for the government. In 1994, Rafik organized a Water Resources Management (WRM) seminar at the Mkonge Hotel in Tanga, Tanzania, supported by the Government of Tanzania and the World Bank Economic Development Institute’s Water Policy Program. The seminar provided a platform to share the findings, lessons learned, and recommendations from the Rapid Water Resources Assessment (RWRA).

The RWRA found a significant lack of policy, legal, and institutional capacity for managing water resources in Tanzania. It recommended a phased approach to improving water resource management in the country, identifying four priority basins: Pangani, Rufiji, Wami Ruvu, and Lake Victoria, out of the nine total basins. The Pangani and Rufiji basins were experiencing notable water use conflicts among irrigation, hydropower production, livestock keeping, and protected national parks. Meanwhile, the Wami Ruvu basin faced a supply deficit due to the rapidly increasing water demands from the capital city, and the Lake Victoria basin was encountering severe environmental degradation. Rafik served as the lead editor for the seminar proceedings.

The phased approach would address key issues in the four priority basins and focus on developing and establishing essential policies, legal frameworks, and the necessary institutional structures for effective WRM. The next phase would scale up efforts to address water challenges in the remaining five basins.

The Tanga seminar also provided a significant opportunity to initiate dialogue on preparing the World Bank River Basin Management and Smallholder Irrigation Improvement Project (RBMSIIP). The GOT implemented this project from 1997 to 2003, focusing on the two priority basins, the Pangani and Rufiji basins, where conflicts over water use for irrigation, hydropower generation, livestock, and national parks were on the rise.

RBMSIIP was the first dedicated investment in managing water resources in Tanzania. Rafik guided the RBM component of the project. RBMSIIP created synergies between water management and irrigation improvement in pilot schemes and demonstrated improvements in irrigation water use efficiencies and crop productivity. It contributed to developing a progressive 2002 National Water Policy (NAWAPO 2002), which formally adopted Integrated Water Resources Management as a central framework for managing water resources in Tanzania. NAWAPO 2002 was developed through a comprehensive consultative process.

Rafik also served as the technical expert for the Lower Kihansi Environmental Management Project from 2000 to 2012. His role focused on helping mediate a contentious dispute and mitigating the impact of the Lower Kihansi Hydropower Plant's operations on the unique ecosystem of the downstream Kihansi Gorge and the endangered Kihansi Spray Toad. He played a key role in successfully negotiating the final conditions of the project's highly contested water right, which was the subject of a multi-agency dispute. His guidance resulted in a win-win outcome. TANESCO could generate additional electricity worth approximately US$19 million per year, beyond the conditions of the provisional water right. TANESCO implemented an innovative environmental flow regime, which helped restore the gorge ecosystem to pre-dam construction conditions and allowed for the successful reintroduction of Kihansi Spray Toad from captive populations held at the University of Dar es Salaam and U.S. zoos. Additionally, Rafik assisted in preparing the GEF-funded Kihansi Catchment Conservation and Management Project to support the Kihansi catchment and facilitate the reintroduction of the KST. The Kihansi experience underscored the need for explicit policy provisions regarding environmental water allocation in the 2002 National Water Policy.

Rafik served as the technical expert for the Dar es Salaam Water Supply and Sewerage Project (DWSSP) from 2004 to 2007, supported strengthening the Wami Ruvu River Basin Office, and oversaw the preparation of the Dar es Salaam water supply masterplan. Under his guidance, the Future Water Sources Options Study accessed and utilized the proprietary data from 19 deep oil and gas wells from the Ministry of Energy and drilled 3 deep test wells at Mpiji, Kimbiji, and Mprera which helped in identifying the Kimbiji Aquifer, a new deep coastal groundwater resource. Thereafter, the master plan recommended the Kimbiji aquifer and Kidunda Dam as the primary water supply sources for Dar es Salaam.

From 2005 to 2006, Rafik provided strategic leadership and was the lead author of the World Bank Report titled "United Republic of Tanzania Water Resources Assistance Strategy: Improving Water Security for Sustaining Livelihood and Growth," prepared under Ato Brown's leadership. This strategy highlighted the structural weaknesses in Tanzania's high economic growth concerning water resource management. It emphasized that food security, energy security, environmental security, health security, industrial security, and social and economic security are all directly or indirectly reliant on water security. It laid the analytical groundwork for developing the Government of Tanzania's Water Sector Development Program (2005-2030).

Rafik was a key team member who prepared the $200 million World Bank Water Sector Support Program, part of the Government of Tanzania's $1.3 billion Water Sector Development Program Phase 1 (WSDP1). This initiative was Africa's largest program to expand urban and rural water supply while enhancing water resource management and development.

He led WSDP1’s Water Resources Management and Development component, which focused on building the capacity of river basin organizations. He guided the technical studies, the development of the Water Resources Management Act and Regulations, the preparation of the strategy for managing water quality and controlling pollution, the preparation of integrated water resources development and management plans for seven of the nine river basins, and the preparation (feasibility studies and detailed design) of priority water resources infrastructure–-Pangani basin boreholes, Kidunda Dam, Kimbiji Aquifer comprehensive assessment, Phase 1 Kimbiji aquifer development, Ndembera Dam, Farkwa Dam, and Mchema Dam.

After retiring from the World Bank, he offered advisory assistance in groundwater management in Kenya, and collaborates with the International Lake Environment Committee to facilitate the implementation of Integrated Lake Basin Management (ILBM). He also supported the GOT in the implementation of integrated water resource management (IWRM) at the national and basin levels.

In 2023, he made the following observation and recommendation to the Ministry of Water: “Given some of the largest freshwater lakes in the world storing enormous quantities of freshwater, their rapidly deterioration conditions, and the insufficient capacity for sustainably managing lakes, using principles of integrated lake basin management (ILBM), Dr. Hirji recommended that the GOT consider the establishment of a regional center in Tanzania that can help develop Tanzania's and Africa's capacity for ILBM, and consider using the SADC Groundwater management institute as a model to learn from.”

***The Fourth International Maji Scientific Conference concluded on January 31, 2025, with the acceptance of all four recommendations presented by Dr. Hirji in his keynote address***. He emphasized the importance of integrating lake basin management into Tanzania's overall water resource development and management practices, extending the application of integrated water resources management. The country will also officially recognize and celebrate August 27 as World Lakes Day each year. This day aims to raise public awareness, engage local communities, and provide a platform for natural and social scientists to network regarding the significance of Tanzania's essential lakes and lake basin resources. Additionally, with Dr. Hirji's support, Tanzania has submitted a competitive bid to host the World Lakes Conference 21 in 2027, coinciding with World Lakes Day. Most importantly, the Government of Tanzania is committed to establishing a regional center of excellence dedicated to sustainably managing African lakes and reservoir basins. This center will enhance the nation's capacity in various areas, including aquatic science, limnology, ecology, land use planning, and management, water quality assessment, the protection and management of both point and nonpoint sources of pollution, and the control of aquatic weeds and invasive species. It will also focus on community empowerment, technological advancements, and sustainable financing.

By effectively integrating these elements into water resource management and development practices, the center will be crucial for sustainably managing Tanzania's significant and valuable aquatic assets. This approach is essential for bridging the gap between environmental and water resource management, which is key to building climate resilience.

According to Washington Mutayoba, "Rafik has been our water resources guru, teacher, adviser, mentor, and friend for nearly 28 years." "He is widely recognized as a strategic thinker and a leading authority on integrated water resources management in Tanzania."

Following the conclusion of the conference, Dr. Adam Karia, the Rector of the Water Institute, expressed his gratitude for Dr. Hirji's dedication, commitment, and exemplary strategic leadership. He acknowledged Dr. Hirji's extensive and impactful published work and emphasized that it is both appropriate and timely to recognize Rafik's outstanding contributions and leadership on global, regional, and national levels, particularly in Tanzania.

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