



Name Nemanja Trifunović
 Year of birth 1959
 Nationality Dutch/Serbian
 Present position Associate Professor of Water Supply Engineering,
 Department of Environmental Engineering and Water Technology
 Years with firm From 1990 – present

**EDUCATION**

1984 - BSc Civil Engineering, Specialisation in Hydrotechnics, University of Belgrade, Serbia.
 1990 - MSc Civil Engineering, Specialisation in Hydraulics, University of Belgrade, Serbia.
 2012 - PhD thesis: 'Pattern Recognition for Reliability Assessment of Water Distribution Networks', Delft University of Technology, the Netherlands.

TRAINING

2004 - Workshop on Creative Learning Methods, Hohai University and National Hydraulic and Research Institute, Nanjing, China.
 2010 - Certificate University Teaching Qualification. 3TU Education, the Netherlands.

EMPLOYMENT RECORD

1990 - present - Water Supply Expert, UNESCO-IHE Institute for Water Education, Delft, the Netherlands.
 1988 - 1990 - System Development Engineer, Belgrade Waterworks and Sewerage, Serbia.
 1987 - 1988 - Compulsory Military Service.
 1986 - 1987 - Assistant Lecturer, Institute of Hydrotechnics, Faculty of Civil Engineering, University of Belgrade, Serbia.

KEY QUALIFICATIONS

Specialist in the field of water distribution, in general, and in application of computer models in urban distribution networks, in particular. Apart from lecturing assignments, also involved in research guidance as well as in organisation of various forms of training, including online learning modules. Lecturing and advisory missions conducted mostly in Africa and Asia included participation in educational and training programmes, and capacity-building projects. Next to his academic duties, served as the programme coordinator of the Sanitary Engineering Masters programme and online course coordinator. Currently, the coordinator of the programme in water distribution at UNESCO-IHE. The director of two large capacity-building projects conducted at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana, in period 2001-2011. Presently, the director of two four-year capacity building projects: at Tshwane University of Technology in South Africa (since 2010), and at FIPAG (National Urban Water Asset Holding and Investment Fund) in Mozambique (since 2012), leading the consortia composed of Dutch and international organisations: Delft University of Technology, NHL University of Applied Science, SWO Dutch training institute for water management, World Waternet, IRC International Water and Sanitation Centre, University Eduardo Mondlane, UNESCO-HidroEX, and Rand Water.

MAIN DISCIPLINE / SPECIALISATION

Urban Water Distribution

LANGUAGE PROFICIENCY

<i>Language</i>	<i>Reading</i>	<i>Speaking</i>	<i>Writing</i>
Serbian	Mother tongue	Mother tongue	Mother tongue
English	Good	Good	Good
Dutch	Good	Good	Good

PROFESSIONAL AFFILIATIONS

Member: International Water Association (IWA), American Waterworks Association (AWWA), Serbian Association for Water Technology and Sanitary Engineering.



EXPERIENCE RECORD

Professional Experience

1990 – present	<p>Water Supply Engineering Expert:</p> <p>Education and research in the field of water transport and distribution: design and operation; use of computer models; reliability assessment; water demand management; non-revenue water and leakage management strategies, asset management of water distribution networks.</p> <p>Curriculum development and teaching for postgraduate- and tailor made programmes; application of modern teaching methods and tools.</p> <p>MSc and PhD research guidance.</p> <p>Identification, formulation and implementation of capacity building projects.</p> <p>Design and management of post-graduate programmes in Water Supply Engineering.</p>
2012 – present	Project Director, Capacity Building Project on Set-up of the FIPAG Academy for Professional Development in Water and Sanitation, Maputo, Mozambique.
2010 – present	Project Director, Capacity Building Project on Enhancing Institutional Capacity in Water and Waste Water Treatment, at Tshwane University of Technology, Pretoria, South Africa.
2010 – present	Member of Examination Board, UNESCO-IHE
2010 – 2012	Vice-Chairman of Works Council, UNESCO-IHE
2007 – 2009	Coordinator of Online education at UNESCO-IHE
2005 – 2011	Project Director, Water Resources Management and Environmental Sanitation for Ghana and West Africa, Capacity Building Project at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
2007	Member of committee for educational innovation at UNESCO-IHE
2005	Interim Project Director, Partnership for Water, Education and Research Project, UNESCO-IHE.
2001 – 2004	Project Director, Water Supply and Environmental Sanitation for Ghana and West Africa, Capacity Building Project at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
2001 – 2003	Programme Coordinator, The Masters Programme in Sanitary Engineering, UNESCO-IHE.
1999 - 2001	Resident Project Leader, Water Supply and Environmental Sanitation for Ghana and West Africa, Capacity Building Project at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
1994 - 1997	Programme Coordinator, The Masters Programme in Sanitary Engineering, UNESCO-IHE.



EXPERIENCE in CONSULTANCY, PROJECT ASSIGNMENTS and EDUCATION**Missions in Period 2002-2012**

2012	<i>Mozambique</i> , Kick-off mission, Set-up of the FIPAG Academy for Professional Development in Water and Sanitation - capacity building project at FIPAG (National Urban Water Asset Holding and Investment Fund), Maputo, October 2012.
2012	<i>South Africa</i> , Organisation and implementation of the 2 nd WATSAN stakeholder workshop for the Water and Wastewater Treatment Sector, WISA Conference, Cape Town, May 2012.
2012	<i>South Africa</i> , Project management mission, Enhancing Institutional Capacity in Water and Waste Water Treatment - capacity building project at Tshwane University of Technology, Pretoria, February 2012.
2012	<i>Georgia (2x)</i> , fieldwork assessment of the water supply situation and assistance in development of water safety plans in the towns of Oni and Ambrolauri, and Akhmeta and Telavi, within the framework of the project on 'Integrated Natural Resources Management in Watersheds of Georgia' (INRMW-Georgia), January/April 2012.
2011	<i>South Africa</i> , Organisation and implementation of WATSAN stakeholder workshop on understanding of occupational profiles as the basis for skills planning and development in the Water and Wastewater Treatment Sector, Pretoria, December 2011.
2011	<i>Croatia</i> , Preparation and moderation of the round table sessions in the 6th GEF Biennial International Waters Conference, Dubrovnik, October 2011.
2011	<i>South Africa</i> , Project management mission, Enhancing Institutional Capacity in Water and Waste Water Treatment - capacity building project at Tshwane University of Technology, Pretoria, September 2011.
2011	<i>Serbia</i> , Final workshop of the G2G project: Comparative and Strategic Analysis for Future Water Supply of Vojvodina, July 2011.
2010	<i>South Africa</i> , Acquisition mission for the development of proposal for Nuffic-NICHE funded capacity building project at Tshwane University of Technology, Pretoria, April 2010.
2010	<i>Uganda</i> , Preparation and moderation of the round table sessions on innovation in education and training for the improved performance of water utilities, in the 15th Congress of African Water Association, Kampala, March 2010.
2010	<i>Ghana</i> , Inception mission to establish the double-degree MSc programme run by Kwame Nkrumah University of Science and Technology and UNESCO-IHE, Kumasi, February 2010.
2009	<i>Ghana</i> , Project management mission, Water Resources Management and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi; organisation of regional Workshop on Training Needs and Research Gaps in Integrated Water Resources Management, Accra, February 2009.
2008	<i>Ethiopia</i> , Assessment of water distribution network performance of Addis Ababa Water Supply and Sewerage Authority (AWSSA) and assist in development of the proposal for implementation of tailor made training for the middle level managers of the company, Addis Ababa, June 2008.



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- 2008 *Indonesia*, Assistance in curriculum development of the MSc programme in Water Quality Management, in the framework of joint Indonesian-Dutch Water Quality Education and Laboratory Research Centre in East Indonesia. University 'Sam Ratulangi' (UNSRAT), Manado, North Sulawesi, May 2008.
- 2008 *Ghana/Burkina Faso*, Project management mission, Water Resources Management and Environmental Sanitation for Ghana and West Africa, Capacity Building Project at Kwame Nkrumah University of Science and Technology; development of regional cooperation between KNUST and International Institute for Water and Environmental Engineering in Ouagadougou (2iE), Kumasi/Ouagadougou, March 2007.
- 2007 *Mongolia*, Inception mission to assess water distribution network performance of Water Supply and Sewerage Company of Ulaanbaatar (USUG) and develop the proposal for implementation of public-private partnership between USUG and Vitens-Evides International (VEI), Ulaanbaatar, October 2007.
- 2007 *Ghana (3x)*, Project management missions, Water Resources Management and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February/ November 2007; development of regional cooperation in the framework of the West African Network for Integrated Water Resources Management (WA-Net), Accra, June 2007.
- 2006 *Uganda*, Assistance in development of the proposal for regional capacity building project in water supply and sanitation initiated by National Water and Sewerage Corporation (NWSC) and University of Makerere, Kampala, May 2006.
- 2006 *Ghana (2x)*, Project management missions, Water Resources Management and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February/ November 2006.
- 2005 *Ghana*, Organisation and implementation of stakeholder workshop on need assessment for education and training in water supply, water resources engineering and management, and environmental sanitation in Ghana, Accra, November 2005.
- 2005 *Ethiopia*, Training and assessment of action plan implementation on water demand management developed by middle-level managers from Addis Ababa Water Supply and Sewage Authority, UN-Habitat project Managing Water for African Cities, Phase 1, Addis Ababa, April 2005.
- 2005 *Netherlands Antilles*, Project evaluation of water distribution system at the Dutch side of the island of St. Maarten, Government of St. Maarten, St. Maarten, March 2005.
- 2005 *Ghana*, Project management mission, Water Resources Management and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February 2005.
- 2004 *Kenya*, Design and implementation of Senior-Level Managers Training on Water Demand Management of Seven African Cities, UN-Habitat project Managing Water for African Cities, Phase 1, Nairobi, November 2004.
- 2004 *Kenya/Ethiopia*, Design and monitoring of Middle-Level Managers Training on Water Demand Management of Kenyan/Ethiopian Water Supply Experts, UN-Habitat project Managing Water for African Cities, Phase 1, Nairobi/Addis-Ababa, September 2004.
- 2004 *Ghana*, Project management mission, Water Supply and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February 2004.
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- 2003 *Ghana*, Project management mission, Water Supply and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February 2003.
- 2002 *Ghana (2x)*, Project management missions, Water Supply and Environmental Sanitation for Ghana and West Africa - capacity building project at Kwame Nkrumah University of Science and Technology, Kumasi, February/September 2002.
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Short Courses in Period 2002-2012

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- 2005 – present *The Netherlands*, Design and implementation of Online course in Water Transport and Distribution, running annually.
- 2002 – present *The Netherlands*, Design and implementation of 3-week short courses in Water Transport and Distribution 1 (basic) and 2 (advanced), running annually.
- 2011 *Georgia*, Preparation and implementation of the course on Water Safety Planning run for employees of National Water Supply Company of Georgia, Tbilisi, October 2011.
- 2011 *Ethiopia*, Development and implementation of the short course on Water Distribution Modelling using WaterCAD software for the experts of Harar Water Supply Company, Haramaya University, August 2011.
- 2009 *Egypt*, Development and implementation of the short course on Innovative Water Distribution Systems for the experts from the Egyptian Water Supply Sector and the staff/students of the Helwan and An Shams Universities, Cairo, August 2009.
- 2009 *Iran*, Development and implementation of the short course on Innovative Water Distribution Systems for the employees of National Water and Wastewater Engineering Company (NWWEC), Power and Water University of Technology, Tehran, April 2009.
- 2008/2009 *Iran (2x)*, Development and implementation of the short course on District Metering Areas and Pressure Management for the employees of the National Water and Wastewater Engineering Company (NWWEC), Power and Water University of Technology, Ministry of Energy, Tehran, October 2008; repeated in January 2009.
- 2008 *Indonesia*, Development and implementation of the short course in Water Treatment and Distribution for the lecturers of University 'Sam Ratulangi' (UNSRAT) in Manado, North Sulawesi, May 2008.
- 2006 *The Netherlands*, Design and implementation of tailor-made training on Non-Revenue Water and Leakage Management for Water Distribution Experts of K-Water company in South Korea, Delft, September-October 2006.
- 2006 *The Netherlands*, Design and implementation of tailor-made training in Water Distribution for Water Supply Experts from Nepal, Delft, September 2006.
- 2005 *Uganda*, Design and implementation of tailor-made training on Use of Computer Models in Water Distribution for National Water and Sewerage Corporation and Makerere University, Kampala, October 2005.
- 2004 *Kenya*, Design and implementation of training of trainers on Water Demand Management of Seven African Cities, UN-Habitat Project Managing Water for African Cities, Phase 1, Nairobi, June 2004.
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| 2003 | <i>Ghana</i> , Design and implementation of African Alumni Refresher Course on Urban Infrastructure Provision and Management, Accra, September 2003. |
| 2002 | <i>Taiwan</i> , Design and implementation of tailor-made training in Water Transport and Distribution for Taiwan Water Supply Company, Taichung, December 2002. |
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PUBLICATIONS

BOOKS

Trifunović, N. 2012., *Pattern Recognition for Reliability Assessment of Water Distribution Networks*, 278 p., PhD manuscript, Taylor & Francis Group, London, UK.

Odai, S.N., Trifunović, N., Eds. 2010. *Training Needs and Research Gaps in West Africa*. Proceedings of the Regional Workshop on Integrated Water Resources Management held in Accra, Ghana, February 2-3, 2009.

Trifunović, N. 2006., reprint 2008. *Introduction to Urban Water Distribution*, 509 p., Taylor & Francis Group, London, UK.

Trifunović, N. 2002. *Small Community Water Supplies/IRC Technical Paper Series 40* edited by Smet J. and van Wijk C., *Chapter 20: Water Transmission, 21 p., Chapter 21: Water Distribution, 32 p.* International Water and Research Centre (IRC), 585 p., Delft, The Netherlands.

JOURNAL PAPERS

Trifunović, N., Maharjan, B., Vairavamoorthy, K., 2013. *Spatial Network Generation Tool for Water Distribution Network Design and Performance Analysis*, Water Science & Technology – WSTWS 13.1/2013 p.1-19, IWA Publishing 2013.

Ghebremichael, K., Gebremeskel, A., Trifunović, N., Amy, G. 2008. *Modelling Disinfection By-products: Coupling Hydraulic and Chemical Models*, Water Science & Technology – WSTWS 8.3/2008 p.289-295, IWA Publishing 2008.

Trifunović, N. 2006. *Water Demand: Quantities, Patterns and Trends*, Journal for Water and Sanitary Technology 5/2006, Association for Water Technology and Sanitary Engineering, Belgrade, Serbia, 21 p. (in Serbian/English).

CONFERENCE PAPERS

Trifunović, N., Vairavamoorthy, K. 2012. *Simplified Emitter Based Approach for Pressure-Driven Demand Calculations of Networks with Extreme Topography*. Manuscript presented at the 14th International Water Distribution System Analysis Conference, Adelaide, Australia, September 24 – 27, 2012.

Trifunović, N., Kanowa, L., Vairavamoorthy, K. 2012. *Impact of Balance between Investment and Operational Costs on Resilience of Water Distribution Networks*. Manuscript presented at the 14th International Water Distribution System Analysis Conference, Adelaide, Australia, September 24 – 27, 2012.

Trifunović, N. 2012. *Experiences in Maintenance of Water Quality in Distribution Systems in the Netherlands* (in Serbian Language). Manuscript presented at the international seminar on Water Quality in the Waterworks Systems and Industry Water, Belgrade, Serbia, November 08-09, 2012. Proceedings published by Serbian Association for Water Technology and Sanitary Engineering, 2012.

Trifunović, N., Sharma, S., Pathirana, A. 2009. *Modelling Leakage in Distribution System Using EPANET*. Manuscript presented at the IWA Water Loss 2009 Conference, Cape Town, South Africa, April 26 – 30, 2009.



Trifunović, N., Odai, S.N. 2009. *Capacity Building Experiences from Collaboration between KNUST and UNESCO-IHE*. Manuscript presented at the Regional Workshop on Integrated Water Resources Management, Accra, Ghana, February 2-3, 2009.

Trifunović, N. 2008. *Modern Practices in Operation and Maintenance of Water Supply Systems in The Netherlands*. Key-note given at the 2nd National Conference on Operation and Maintenance of Water and Wastewater Systems, Niroo Research Institute, Tehran, Iran, October 7 – 9, 2008.

Trifunović, N., Vairavamoorthy, K. 2008. *Use of Demand-Driven Models for Reliability Assessment of Distribution Networks in Developing Countries*. Manuscript presented at the 10th International Water Distribution System Analysis Conference, Kruger National Park, South Africa, August 17 – 20, 2008.

Trifunović, N. 2008. *First Experiences from Running Distance Learning and Problem-Based Learning Programme in Water Distribution at UNESCO-IHE*. Manuscript presented at the International Research Symposium on Problem Based Learning, University of Aalborg, Denmark, June 30 – July 1, 2008.

Lee, K.W., Trifunović, N., Vairavamoorthy, K. 2007. *Application of Genetic Algorithms in Reliability Optimisation of Distribution Networks*. Manuscript presented at the International Conference on Computing and Control for the Water Industry, Leicester, UK, September 3-5, 2007. Supplementary Proceedings published under title *Water Management Challenges in Global Change* by Ulanicki et al. (eds), De Montfort University, Leicester, UK, 2007.

Trifunović, N., Sharma, S., Figueres, C. 2007. *Urban Water Demand Management and Strategies in Continental Europe*. Manuscript prepared for the International Workshop on Water Demand Management in Urban Areas in Light of Tourism Development, Muscat, Sultanate of Oman, August 27 – 28, 2007.

Yoo, T.J., Trifunović, N., Vairavamoorthy, K. 2005. *Reliability Assessment of the Nonsan Distribution Network by the Method of Ozger*. Manuscript prepared for the 31st WEDC International Conference on Maximizing the Benefits from Water and Environmental Sanitation, in Kampala, Uganda, October 31 – November 4, 2005.

Totsuka, S.N., Trifunović, N., Vairavamoorthy, K. 2004. *Intermittent Urban Water Supply under Water Starving Situations*. Manuscript prepared for the 30th WEDC International Conference on People-Centered Approaches to Water and Environmental Sanitation, in Vientiane, Lao PDR, October 25-29, 2004.

Odai, S.N., Andam, K.A., Trifunović, N. 2004 *Strategic Partnerships for Sustainable Water Education and Research in Developing Countries*. Manuscript presented at the International Conference on Water Resources of Arid and Semi Arid Regions of Africa, in Gaborone, Botswana, August 3-6, 2004. Proceedings published under title *Water Resources of Arid Areas* by Stephenson, Shemang and Chaoka, Balkema, 2004.

Trifunović, N., Umar, D. 2003. *Reliability Assessment of the Bekasi Distribution Network by the Method of Cullinane*. Manuscript presented at the International Conference on Computing and Control for the Water Industry in London, UK, September 15-17, 2003. Proceedings published under title *Advances in Water Supply Management* by Maksimović, Butler and Ali Memon, Balkema, 2003.

Trifunović, N., Abu Madi, M.O.R. 1999. *Demand Modelling of Distribution Systems With Individual Storage*. Manuscript presented at the 26th A.S.C.E. Annual Water Resources Planning & Management Conference in Tempe, Arizona, June 6-9, 1999.



Trifunović, N. 1999. *Main Concepts of Water Supply in The Netherlands* (in Serbian Language). Manuscript presented at the international conference on Water for 21st Century, Belgrade, Serbia, March 22-24, 1999. Proceedings published by Serbian Association for Water Technology and Sanitary Engineering, 1999.

TECHNICAL REPORTS

Trifunović, N., 2007. *Inception Mission in the Framework of the Utility Support Programme Between Ulaanbaatar Water Supply and Sewerage Authority, Vitens-Evides International BV and Royal Netherlands Embassy in Beijing, PR of China*. UNESCO-IHE evaluation mission report, Delft, The Netherlands.

Trifunović, N. et al., 2005. *Evaluation of the Proposals for an Integrated Sewage and Drinking Water System on St. Maarten – part Water Distribution, Volumes 1 & 2*. UNESCO-IHE Project evaluation report, Delft, The Netherlands.

Blokland, M.W., Trifunović, N. 1993. *Evaluation of Water Distribution Network of Hodaidah, Yemen*. Computer modelling study, UNESCO-IHE, Delft, The Netherlands.
