CV for Martin Rygaard

Personal data
Full name: Martin Rygaard
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Born: 12 November 1978

Affiliation
Department of Environmental Engineering (DTU Environment)
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Career and degrees

2014	Associate Professor, Department of Environmental Engineering, DTU.
2010	Assistant Professor, Department of Environmental Engineering. DTU.
2010	Ph.D., Department of Environmental Engineering, Technical University of Denmark. Thesis: Desalinated water in urban water supplies – a systems approach to identify optimal drinking water composition.
2005	M.Sc. in Environmental Engineering, Technical University of Denmark. Thesis: The potential of augmenting Copenhagen's water supply with desalinated water from Vestamager.
1998	General Certificate of Education, Advanced Level (Studentereksamen). Nørre Gymnasium, Copenhagen, Denmark.

Research area

My current research field is systems analysis of urban water systems. This includes: economic and environmental life-cycle assessments of water systems, drinking water quality modelling and management. I have special focus on systems analysis of novel water supply options (e.g. desalination, water reuse and rainwater harvesting) and the assessment of the proper use of these alternatives to replace conventional water management. Another focus area is on optimal water quality. What is the right water quality at the right time and location?

Projects

2015-2020	*Inno+VIP Waterefficient Industrial Production*. Project participant.
2014-2017	*Water Footprint of Water Supplies*. Project lead and main university supervisor. Industrial PhD-project.
2014-2015	*Water efficient dairies – towards the waterless dairy* (Vandeffektive mejerier – mod det vandløse mejeri). Work package lead: Technology development (work package budget is 6 million DKK) . The project aims at developing water saving technologies primarily through innovative metering and water reuse. The ultimate goal is to provide technology for the "water self-sufficient dairy".
2014	*Technological Contingency – Water Resources: Reclaimed Wastewater*. Project Manager. With HOFOR. The project will identify and describe current challenges for direct wastewater reclamation for urban drinking water supplies.
2014-2016	*Saltskyl*. Participant. With HOFOR, DHI, Aalborg University, Grontmij, Danish Nature Agency, Copenhagen City, Krüger (Veolia). Demonstration project of innovative toilet flushing in a new city development. My role is to develop environmental and risk assessments of the system.

2013 *Sustainable cities*. (Bæredygtige Byer) Project lead. Collaboration with Aalborg University and HOFOR. The project aim was to explore and describe international state-of-the-art within definition of "sustainable cities" and initiate a discussion of the question "what is a sustainable city?".

2012-2013 *Northern Habour – a sustainable water solution*. Part of the "Water in Urban Areas". Work package lead: A secondary water supply for Nordhavn. The work package defined a historic landmark in Danish urban water management being the first proposal of concepts for alternative water supply based on dual distribution, greywater reuse, desalination etc. for a large-scale city development. The proposed concepts were evaluated using newly developed quantitative environmental assessments in combination with qualitative user surveys.

2012 *Sector developing project on cleaning technology and water consumption in the agricultural and food sector* (Sektorudviklingsprojekt om rengøringsteknologi og vandforbrug i landbrugs- og fødevaresektoren). Participant. Internal DTU project.

2012 *Quantitative potential for rainwater use*. Project lead of stage 1 where the project developed a new framework for the assessment of stormwater management efficiency, based on the three-points-approach.

2010-2015 *Future water management in big cities*. R&D collaboration framework for DTU, the three largest Danish water utilities (VandCenter Syd, Aarhus Vand & HOFOR) and the largest wastewater facility operator (Biofos). Project manager. Main outcome have been a prioritized list of research and innovation topics for the collaboration, and several projects and project proposals based on the priorities.

2012 *A framework for defining water quality criteria for a secondary water supply*. Principal author. The project explored international use of water quality criteria for non-potable use and proposed a framework for an implementation in a Danish context.

2011-2014 *RiskStyr – From control to management – Risk management in water supplies* (RiskStyr - Fra kontrol til styring – Risikostyring i vandforsyningen). Participant. Project aims at developing new strategies for monitoring risks in water distribution systems.

2009-2010 *Future climate change technologies*. Participant.

2009 *Self-sufficient water supplies, project 5: Holistic assessment of water supply alternatives – desalination* (Egen vandressource projekt 5: Helhedsorienteret analyse af vandforsyningsalternativer – afsaltning). Principal author.

2008 *Field trip to Singapore – Asia's Water Hub*. Arranged field trip for water utility executives, head of department DTU Environment, and researchers from DTU Environment.

Funding obtained with Martin Rygaard playing a key role (Total budget/DTU Environment share, Funding source)

2014 Water Footprint of Water Supplies (2.5 million, InnovationsFonden). Proposal lead author.

2014 Water efficient dairies – towards the waterless dairy (18.2/0.5 million, Ministry of the Environment). Proposal co-author.

2014 Technological Contingency – Water Resources: Reclaimed Wastewater (0.1/0.1 million, undisclosed). Proposal lead author.

2013 Saltskyl (2.7/0.35 million, Ministry of the Environment). Proposal co-author.

2013 Sustainable cities. (0.22/0.18 million, HOFOR). Proposal lead author.

2012 Northern Habour – a sustainable water solution. Proposal co-author. (7.2/0.7 million Vand I Byer/RTI Ministry of higher education and Science)

2012 Quantitative potential for rainwater use stage 2 (2.0/2.0 million, The Foundation for Development of Technology in the Danish Water Sector). Proposal lead author

2012 Quantitative potential for rainwater use stage 1 (0.23/0.23 million, KE (now HOFOR) and Aarhus Vand). Proposal lead author

2011 Redegørelse om sundhedseffekter af blødgøring specielt med fokus på caries. (0.06/0.06

million, KE). Proposal lead author.

2010 Future water management in big cities – framework agreement (0.4/0.4 million, KE (now HOFOR), Aarhus Vand, Vandcenter Syd (since 2012). Proposal lead author.

2012 A framework for defining water quality criteria for a secondary water supply (0.08/0.08 million, KE (now HOFOR), Aarhus Vand). Proposal lead author.

2009 Egen vandressource projekt 5: Helhedsorienteret analyse af vandforsyningsalternativer – afsaltning (0.6/0.6 million, KE (now HOFOR)). Proposal co-author.

Leadership experiences and boards/committees

2014- Board member The ATV Foundation for Soil and Groundwater (ATV Jord og Grundvand).

2014- Member of DTU Library Committee, representing DTU Environment.

2013- Water Supply Research Group Coordinator, DTU Environment

2012- Member of the development board for the new (2014) B.Eng. study line "Byggeri og Infrastruktur (civil and infrastructure engineering)" at DTU.

2011- The Water Pollution Committee of The Society of Danish Engineers (Spildevandskomiteen).

Societal impact

2014 HOFOR initiates a process to employ water softening throughout Region H following research conducted by Martin while he was a PhD student and subsequent research by Berit Godskesen under Martin's supervision at DTU Environment. 30th September 2013 the public health inspector approved softening trial with reference to the report "Redegørelse om sundhedseffekter af blødgøring i København specielt med fokus på caries". The consulting engineers COWI expect households in Region H to be able to save DKK 228 million annually as a result of the work (See Politiken 10 May 2014).

2012 The definition of the 3-Points-Approach (3PA) published in the report "Quantitative potential for rainwater use" is used by Aarhus Vand in the stormwater management and extreme rain event contingency planning with Aarhus Municipality (Denmark's 2nd largest city).

2010 A draft of the paper: "Designing water supplies: optimizing drinking water composition for maximum economic benefit" supported decisions to make adjustments of the post-treatment process of the 45 Mm3/yr desalination plant in Perth, Australia (one of the worlds largest).

Supervision of Ph.D. Students

Supervisor/co-supervisor for 3 PhD-projects.

- Ryle Gejl 2014-2018 (Main supervisor)
- Herle Mo Madsen 2014-2017 (Co-supervisor)
- Berit Godskesen 2009-2012 (Co-supervisor)

External research collaboration and visits

2010 KompetenzZentrum WasserBerlin and Berliner Wasserbetriebe. Technical tour of two days and discussions on alternative water management in Berlin.

2008 Water Corporation, Western Australia discussions and collaboration on optimal drinking water quality from desalination plants with Dr. Andrew Bath.

2008 Gold Coast Water 2008.(visit): Field trip and discussions on waste water reuse in Pimpama Coomera, South East Queensland, Australia. Meetings with Dr. Kelly O'Halloran and colleagues on the Gold Coast WaterFuture Strategy

2008 PUB Singapore, 2008 (visit): Visiting major water treatment management facilities over three days in Singapore, including meetings with PUB CEO and CTO. Meeting was arranged by Martin in collaboration with PUB.

Awards

2009 Course of the Year 2008-2009 at DTU Environment: 12121 – Water Supply (Vandforsyning). Elected by the students.

Career development

2015 Supervision of PhD students at DTU. (Introduction to PhD supervision at DTU)

2014 Deans' teaching seminar: Time-efficient teaching with improved learning outcome.

2013 Deans' teaching seminar: How do we approach the students in their first year of studies?

2012 Supervision of larger projects (Pedagogic training in supervision of student projects)

2012 UDTU Education in University teaching at DTU. 1½ year programme (250 hrs) in university teaching

Media appearences

Martin has been quoted or participated in interviews and features in 6 radio programs, 3 TV programs and 13 newspaper articles across several major public media in Denmark.

Radio

6. DR P4 Interview on consequences of drinking water softening in Brøndby, 15 February 2014
5. Radio 24-Syv Forfra med Jeppesen. 8 minute live interview (Alternative water supply options).
4. DR P4 Juni 2012. P4 Morgen. Live interview.
3. DR P1 Videnskabens Verden 27 February 2010. 7minutes interview (desalination)
2. DR P1 Morgen 3 February 2009. 7 minutes live interview (changing mineral content of drinking water)
1. DR P1 Megabyer - Videnskabens verden 15 November 2008. 15 minutes interview. (Desalination and water reuse)

TV

3. DR2 Viden Om 19 October 2010. Feature on desalination in Copenhagen
2. TV2 Lorry Regionale Nyheder 10 August 2010. Interview (softening of drinking water)
1. DR2 Deadline 3 February 2009. 2 Minute Live interview (changing mineral content of drinking water)

Written media

13. Politiken (national newspaper frontpage). Blødt vand sparer os for millioner: Vandværkerne i hovedstaden vil halvere mængden af kalk i vandet, 10 May 2014
12. Dynamo. Ny bydel med bæredygtig vandforsyning. 13 September 2013.
11. Teknik & Miljø. Tillad afkalkning på vandværker. Oktober 2012
10. JyllandsPosten. Vil du have et glas Øresund?. 20. juni 2012.
9. Fyens Stiftidende/FynskeMedier. Det hellige vand. 14. maj 2011.
8. Weekendavisen. Vanddogmets efterår. 17 September 2010
7. Weekendavisen. Det blå guld. 17 September 2010
6. B.T. Designer-vand kan spare mio. 4 February 2009.
5. Politiken. Kalken koster millioner. 25 April 2009

4. Politiken. Kalken skal ud af vores drikkevand. 25 April 2009
3. Samvirke. Dit vand kan nemt og billigt blødgøres. 1 May 2009
2. Ingeniøren. Designer-vand i hanen kan redde liv og tænder. 30. January 2009
1. Dynamo. Vand er ikke blot vand. Issue 14, September 2008

Publications

Scopus Citation Overview

http://orcid.org/0000-0001-8578-8842. Retrieval date: 15 June 2015. Scopus h index = 6

Publication Year	*Document Title*	*<2011*	*2011*	*2012*	*2013*	*2014*	*2015*	*total*
2015	Selection of spatial scale for assessing impacts of ground…							0
2015	Potential exposure and treatment efficiency of nanoparticles...							0
2014	Holistic assessment of a secondary water supply for a new de...							0
2014	Simplification of water distribution network simulation by t...							0
2013	Life-cycle and freshwater withdrawal impact assessment of wa...					5	1	6
2012	Life cycle assessment of central softening of very hard drin...				2	4	1	7
2011	Designing water supplies: Optimizing drinking water composit...			2	1	4		7
2011	Life cycle assessment of three water systems in Copenhagen-a...		1	3	4	9	1	18
2011	Increasing urban water self-sufficiency: New era, new challe...		2	9	9	8	3	31
2010	Indirect economic impacts in water supplies augmented with d...		1	1		1		3
2009	The valuation of water quality: Effects of mixing different ...	2	4	3	2	1	1	13
Sum		**2**	**8**	**18**	**18**	**32**	**7**	**85**

Refereed Journal Publications

(*Unpublished manuscript)

14. Kirstein, JK, Albrechtsen, H-J & Rygaard, M 2014, 'Simplification of Water Distribution Network Simulation by Topological Clustering – Investigation of its Potential Use in Copenhagen's Water Supply Monitoring and Contamination Contingency Plans' *Procedia Engineering*, vol 89, pp. 1184-1191., 10.1016/j.proeng.2014.11.248

13. *Godskesen, B, Hauschild, MZ, Rygaard, M, Zambrano, K, Albrechtsen H-J, 2014,' A method for multi-criteria evaluation of water supply technologies to identify the most sustainable case alternative for Copenhagen', prepared for *Journal of Environmental Management*.

12. *Sørup HJD, Arnbjerg-Nielsen, K, Mikkelsen, PS & Rygaard, M, 2014, 'Quantitative assessment of urban stormwater management: How the "Three Points Approach" (3PA) can guide the interpretation of different strategic management approaches', Submitted to Water Research.

11. Kirkegaard, P, Hansen, SF & Rygaard, M 2015, 'Potential exposure and treatment efficiency of nanoparticles in water supplies based on wastewater reclamation' *Environmental Science: Nano*, vol 2, pp. 191-202., 10.1039/C4EN00192C

10. *Hybel,A-M, Godskesen, B, Rygaard, M, 2015, 'Groundwater abstraction in water supplies: The choice of spatial resolution makes a vague freshwater impact assessment', In press *Journal of Environmental Management*

9. Rygaard, M, Godskesen, B, Jørgensen, C, & Hoffmann, B, 2014, 'Holistic assessment of a secondary water supply for a new development in Copenhagen, Denmark' *Science of the Total Environment*, 497-498, 430-439. doi:10.1016/j.scitotenv.2014.07.078

8. Godskesen, B, Hauschild, MZ, Rygaard, M, Zambrano, K & Albrechtsen, H-J 2013, 'Life-cycle and freshwater withdrawal impact assessment of water supply technologies' *Water Research*, vol 47, no. 7, pp. 2363-2374., 10.1016/j.watres.2013.02.005

7. Godskesen, B, Hauschild, MZ, Rygaard, M, Zambrano, K & Albrechtsen, H-J 2012, 'Life cycle assessment of central softening of very hard drinking water' *Journal of Environmental Management*, vol 105, pp. 83-89., 10.1016/j.jenvman.2012.03.030
6. Rygaard, M, Arvin, E, Bath, A & Binning, PJ 2011, 'Designing water supplies: Optimizing drinking water composition for maximum economic benefit' *Water Research*, vol 45, no. 12, pp. 3712-3722., 10.1016/j.watres.2011.04.025
5. Rygaard, M, Binning, PJ & Albrechtsen, H-J 2011, 'Increasing urban water self-sufficiency: New era, new challenges' *Journal of Environmental Management*, vol 92, pp. 185-194., 10.1016/j.jenvman.2010.09.009
4. Godskesen, B, Zambrano, KC, Trautner, A, Johansen, N-B, Thiesson, L, Andersen, L, Clauson-Kaas, J, Neidel, TL, Rygaard, M, Kløverpris, NH & Albrechtsen, H-J 2011, 'Life cycle assessment of three water systems in Copenhagen-a management tool of the future.' *Water Science and Technology*, vol 63, no. 3, pp. 565-572., 10.2166/wst.2011.258
3. Rygaard, M, Arvin, E & Binning, PJ 2010, 'Indirect economic impacts in water supplies augmented with desalinated water' *Water Science and Technology: Water Supply*, vol 10, no. 4, pp. 664-671., 10.2166/ws.2010.776
2. Rygaard, M, Arvin, E & Binning, PJ 2009, 'The valuation of water quality: Effects of mixing different drinking water qualities' *Water Research*, vol 43, no. 5, pp. 1207-1218., 10.1016/j.watres.2008.12.014
1. Binning, PJ, Hauger, MB, Rygaard, M, Eilersen, AM & Albrechtsen, H-J 2006, 'Rethinking the urban water management of Copenhagen' *Water Practice and Technology*, vol 1, no. 2., 10.2166/WPT.2006027

Books

1. Rygaard, M, Albrechtsen, H-J & Binning, PJ 2009, Alternative water management and self-sufficient water supplies. IWA Publishing Company, London, UK. 135 pages..

Reports

14. Larsen, SL, Christensen, SCB, Albrechtsen, H-J & Rygaard, M 2015, GISMOVA. GIS-baseret moniteringsstrategi i vandforsyningen. 1. del - Introduktion, baggrund og metode. DTU Miljø.
13. Larsen, SL, Christensen, SCB, Albrechtsen, H-J & Rygaard, M 2015, GISMOVA. GIS-baseret moniteringsstrategi i vandforsyningen. 2. del - Vejledning. DTU Miljø.
12. Kirkegaard, P & Rygaard, M 2014, Renset spildevand som drikkevandsressource, DTU Miljø, Institut for Vand og Miljøteknologi, Danmarks Tekniske Universitet. Kgs. Lyngby. 40 pages
11. Gejl, RN, Hoffmann, B & Rygaard, M 2013, Bæredygtige Byer - Internationale erfaringer til inspiration for udvikling af forsyningsvirksomhed. DTU Miljø, Institut for Vand og Miljøteknologi, Danmarks Tekniske Universitet, Kgs. Lyngby. 41 pages.
10. Rygaard, M, Alsbjørn, L, Ejsing, M, Godskesen, B, Hansen, R, Hoffmann, B, Jørgensen, C, Ledgaard, K, Møller, H-MF, Poulsen, MB, Schmidt, M, Vigsø, S, Zambrano, K 2013 , *Sekundavand i Nordhavn. En forundersøgelse til strategi for alternativ vandleverance*. DTU Miljø, Institut for Vand og Miljøteknologi, Danmarks Tekniske Universitet. Kgs. Lyngby. 124 pages.
9. Rygaard, M & Albrechtsen, H-J 2013, *Begrebsafklaring og oplæg til kvalitetskriterier for sekundavand*. DTU Miljø, Institut for Vand og Miljøteknologi, Danmarks Tekniske Universitet. 32 pages.
8. Albrechtsen, H.-J., Rygaard, M., Sørensen, T. B., Kristensen, G. K., Christiansen, A., Krarup, L., Nielsen, H., Thy, C., *Vandteknologi* in Nielsen, N.A. (ed.), Albrechtsen, H.-J. (ed.), Huusom, J.K. (ed.), Rasmussen, A.A. (ed.), Friis, A. & Hansen, S..S (ed.) 2013, *Rengøring på slagterier og mejerier i Danmark: Udvikling af fremtidens effektive, ressourcebesparende teknologier.* Danmarks Tekniske Universitet. Kgs. Lyngby. pp 15-21.
7. Sørup, HJD, Arnbjerg-Nielsen, K, Mikkelsen, PS & Rygaard, M 2012, *Quantitative potential for rainwater use*. DTU Environment, Kgs. Lyngby. 51 pages.
6. Rygaard, M & Albrechtsen, H-J 2012, *Redegørelse om sundhedseffekter af blødgøring i København specielt med fokus på caries*. DTU Miljø, Kgs. Lyngby. 22 pages + appendices.
5. Rygaard, M, Binning, PJ & Arvin, E 2010, *Desalinated water in urban water supplies – a systems*

approach to identify optimal drinking water composition. PhD thesis, Technical University of Denmark (DTU), Kgs. Lyngby, Denmark. 34 pages + appendices.

4. Rygaard, M, Albrechtsen, H-J, Arvin, E & Binning, PJ 2009, *A5 Opstilling af tjekliste og evaluering af afsaltningsscenarie for København: Integreret håndtering af vand og spildevand i København. Projekt A5.*DTU Miljø, Lyngby. 42 pages + appendices.
3. Rygaard, M, Albrechtsen, H-J & Binning, PJ 2008, *Integreret håndtering af vand og spildevand i København: Projekt A4: Integreret vandhåndtering i Singapore - Technical tour til Sydøstasiens "Water-hub"*. Institut for Vand og Miljøteknologi, Danmarks Tekniske Universitet, Kgs. Lyngby.
2. Rygaard, M, Albrechtsen, H-J & Binning, PJ 2007, *Integreret håndtering af vand og spildevand i København: Projekt A3 - Alternativ vandhåndtering og selvforsyning - international erfaringsopsamling*. Institute for Miljø & Ressourcer, Danmarks Tekniske Universitet, Kgs. Lyngby. 40 pages + 50 pages case descriptions..
1. Rygaard, M, Hauger, MB, Eilersen, AM, Albrechtsen, H-J & Binning, PJ 2006, *Integreret håndtering af vand og spildevand i København: Projekt A2 - Opstilling og analyse af 9 scenarier for fremtidens vand- og spildevandshåndtering i København. Samarbejdsprojekt med Københavns Energi.* Institut for Miljø & Ressourcer, Danmarks Tekniske Universitet, Kgs. Lyngby. 61 pages + appendices.

Conference contributions

18. Kirstein, J, Albrechtsen, H.-J. & Rygaard, M. 2014 Simplification of water distribution network simulation by topological clustering – investigation of its potential use in Copenhagen's water supply monitoring and contamination. Accepted full paper submission at 16th International Conference on "Water Distribution Systems Analysis" 14-17 July 2014, Bari, Italy.
17. Rygaard, M 2013, 'Sekundavand i Nordhavn'. in *Dansk vand konference 2013*. Dansk Vand- og Spildevandsforening - DANVA, Aarhus.
16. Rygaard, M, Godskesen, B, Jørgensen, C & Hoffmann, B 2013, 'Holistic assessment of a secondary water supply for a new development in Copenhagen, Denmark'. *9th IWA Water Reuse Conference*, Windhoek, Namibia
15. Sørup, HJD, Arnbjerg-Nielsen, K, Mikkelsen, PS & Rygaard, M 2013, 'Quantitative potentials for rainwater handling using the "Three Points Approach" (3PA)' Paper presented at 8th International Conference on Planning and Technologies for Sustainable Urban Water Management, Lyon, France, 23/06/13 - 27/06/13
14. Sørup, HJD, Arnbjerg-Nielsen, K, Mikkelsen, PS, Albrechtsen, H-J & Rygaard, M 2012, 'Quantitative potential for rainwater use'. in *6th Annual Meeting of DWRP - Abstracts.* Copenhagen.
13. Godskesen, B, Rygaard, M, Hauschild, MZ, Zambrano, KC & Albrechtsen, H-J 2012, 'Sustainability assessment of water supply in Copenhagen: Alternatives fulfilling the EU-Water Framework Directive' 2012 Water Quality Technology Conference and Exposition (WQTC), Toronto, Ontario, Canada, 04/11/12 - 08/11/12,
12. Godskesen, B, Rygaard, M, Hauschild, MZ, Zambrano, KC & Albrechtsen, H-J 2012, 'Sustainability assessment of water supply in Copenhagen - what is the impact of freshwater withdrawal?'. in *Book of abstracts - SETAC 18th LCA Case Study Symposium and 4th NorLCA Symposium: Sustainability Assessment in the 21st century - Tools, Trends and Applications.* pp. 59.
11. Godskesen, B, Hauschild, MZ, Zambrano, KC, Rygaard, M & Albrechtsen, H-J 2011, 'Assessing the most sustainable alternative for production of drinking water – ASTA a decision support system Alternatives fulfilling the EU-Water Framework Directive'. in *Abstracts proceedings of the 5th Annual Meeting of The Danish Water Research Platform (DWRP) – Forskningsplatformen Vand.* pp. 14-15.
10. Rygaard, M 2011, 'Integrating Product Water Quality Effects In Holistic Assessments Of Water Systems'. in *6th International Conference for Industrial Ecology. Science, systems and sustainability.* International Society for Industrial Ecology.

9. Albrechtsen, H-J, Rygaard, M & Binning, PJ 2010, 'Future urban water supply when the groundwater resource is under pressure'. in *The 4th annual meeting in the Danish Water Research Platform (DWRP), Copenhagen January 28-29, 2010: Abstracts.* vol. 25-26, Danish Water Forum, Hørsholm.
8. Rygaard, M, Albrechtsen, H-J, Arvin, E & Binning, PJ 2009, 'Economic assessment of water quality'. in *3rd annual meeting of the Danish Water Research Platform DWRP - (Forskningsplatformen Vand), 29 January 2009.* vol. Abstracts, pp. 11-12.
7. Godskesen, B, Zembrano, KC, Trautner, A, Johansen, NB, Thiesson, L, Andersen, L, Clauson-Kaas, J, Neidel, TL, Rygaard, M, Kløverpris, NH & Albrechtsen, H-J 2009, 'Life cycle Assessment of three Water Systems in Copenhagen - A management tool of the future'. in *Water & Energy 2009 - mitigation in the water sector & potential synergies with the energy sector 29.-31. October 2009, Copenhagen Denmark.* vol. USB key, International Water Association, London, UK.
6. Rygaard, M, Binning, PJ & Albrechtsen, H-J 2009, 'Strategier for at sikre tilstrækkeligt vand til storbyer, set i et internationalt perspektiv' IDA-miljø mødet "Strategier for byers vandforsyning" den 22. oktober 2009, 01/01/09,
5. Rygaard, M, Albrechtsen, H-J, Arvin, E & Binning, PJ 2009, 'Water quality and energy considerations in water supply'. in *Water & Energy 2009 - mitigation in the water sector & potential synergies with the energy sector 29.-31. October 2009, Copenhagen Denmark.* vol. USB key, International Water Association, London, UK.
4. Rygaard, M, Albrechtsen, H-J, Arvin, E & Binning, PJ 2009, 'Water quality and energy considerations - the costs and benefits of purity' Water & Energy : Mitigation in the water sector & potential synergies with the energy sector, Copenhagen Denmark, 29.-31. October, 01/01/09,
3. Rygaard, M, Arvin, E & Binning, PJ 2008, 'Indirect economic impacts in water supplies augmented with desalinated water'. in *AWWA water quality technology conference and exposition. The premier conference for water quality professionals around the world, Cincinnati, Ohio, November 16-20, 2008.* American Water Works Association (AWWA).
2. Rygaard, M, Arvin, E & Binning, PJ 2008, 'Indirect economic impacts in water supplies augmented with desalinated water'. in *IWA World Water Congress and Exhibition, 7-12 September 2008, Vienna: Proceedings.* vol. CD-ROM, IWA Publishing Company, London, UK.
1. Binning, PJ, Hauger, MB, Rygaard, M, Eilersen, AM & Albrechtsen, H-J 2006, 'Rethinking the urban water management of Copenhagen'. in *IWA World Water Congress and Exhibition, 10-14 September 2006, Beijing, China: Proceedings.* vol. CD-ROM, International Water Association, London, UK.

Oral presentations at international conferences

5. ‘Quantifying freshwater impacts of groundwater abstraction in water supplies’. SETAC Europe 20th LCA Case Study Symposium. 26 Nov 2014, Novi Sad, Serbia
4. 'Holistic assessment of a secondary water supply for a new development in Copenhagen, Denmark'. 2013 *9th IWA Water Reuse Conference*, Windhoek, Namibia
3. 'Integrating Product Water Quality Effects In Holistic Assessments Of Water Systems'.2011 *6th International Conference for Industrial Ecology. Science, systems and sustainability.* International Society for Industrial Ecology.
2. 'Water quality and energy considerations in water supply'. *IWA Water & Energy 2009 - mitigation in the water sector & potential synergies with the energy sector 29.-31. October Copenhagen Denmark*
1. Rygaard, M, Arvin, E & Binning, PJ 2008, 'Indirect economic impacts in water supplies augmented with desalinated water'. *AWWA water quality technology conference and exposition. Cincinnati, Ohio, November 16-20,*

Invited speeches, selected

Alternatives to groundwater based water supply: what are the challenges and opportunities?
9th Annual Danish Water Research Meeting.: 29/01/15

Water water everywhere and not a drop to drink, International Peoples' College, Helsingore, 1 Mar 2014

Vand i byer – Københavns Nordhavn – en bydel i vandbalance, Klimatilpasning i offentligt privat samarbejde: Forum for Offentligt Privat Samarbejde 5 March 2014.

Concept for a secondary water supply in Nordhavn (Koncepter for sekundavandsanvendelse i Nordhavn), DANVA and Ministry of the Environment Conference: Konference om Sekundavand: En storm i et glas vand eller kilden til innovation, vækst og eksport? 28 February 2013

Water quality and water treatment (Vandkvalitet og vandrensning), HOFOR Temadag, 4 December 2013.

Advanced Water Treatment (Videregående vandbehandling), DANVA Årsmøde, Kolding, 23 June 2010.