

SUPPLEMENTAL MATERIALS

ASCE Journal of Hydrologic Engineering

Review of Climate Change Adaptation Strategies in Water Management

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DOI: 10.1061/JHYEFF.HEENG-6014

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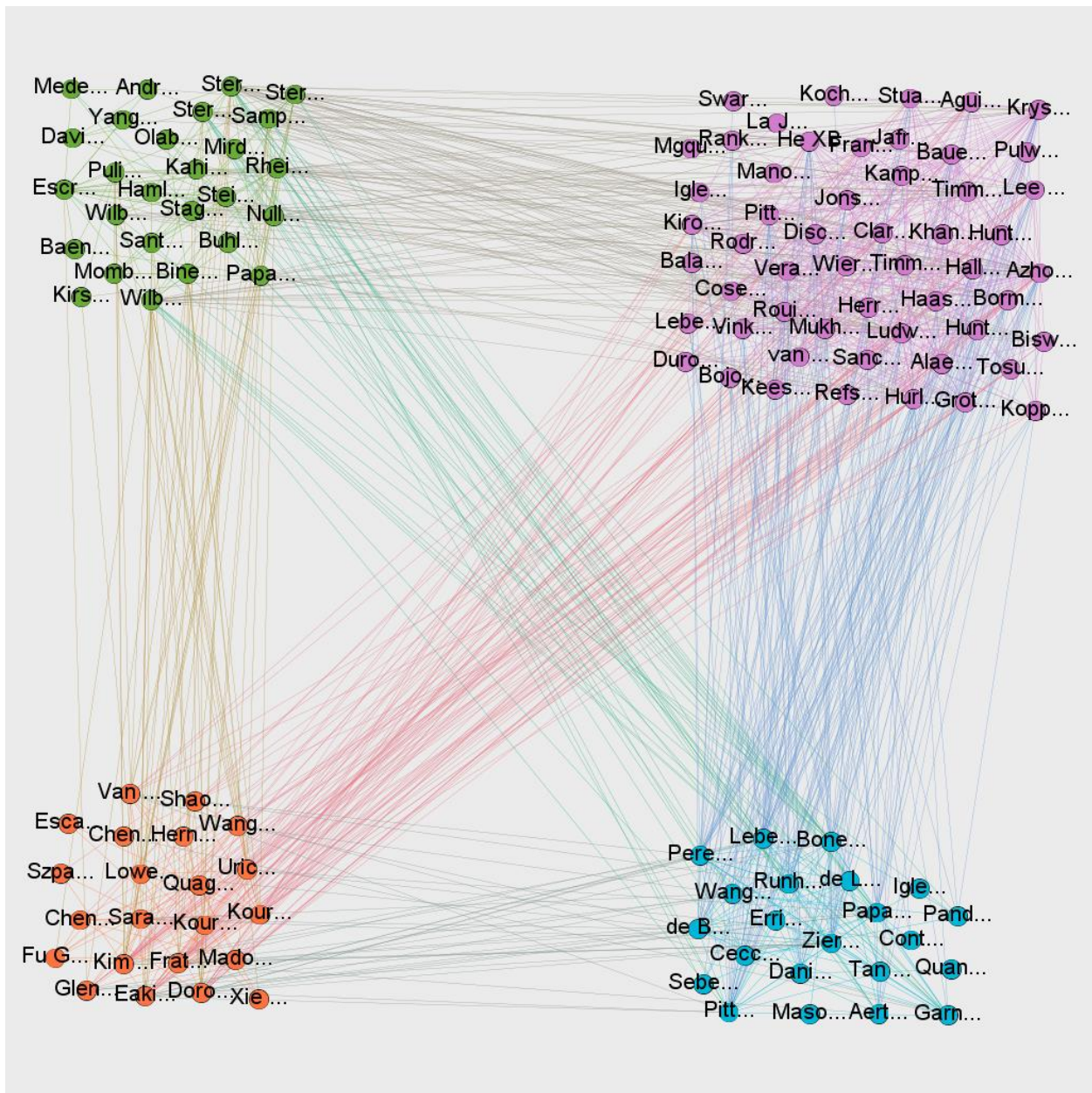


Fig. S1. Publication clusters and their co-citation network. The nodes represent the reviewed articles and the links between the nodes represent the co-citation between the articles.

References: Publications Reviewed in This Study

- Aerts, J. (2005). Adaptation for river basins: connecting policy goals to the water resources system. *WATER SCIENCE AND TECHNOLOGY*, 51(5), 121–131.
doi:10.2166/wst.2005.0123
- Aguiar, F. C., Bentz, J., Silva, J. M. N., Fonseca, A. L., Swart, R., Santos, F. D., & Penha-Lopes, G. (2018). Adaptation to climate change at local level in Europe: An overview. *ENVIRONMENTAL SCIENCE & POLICY*, 86, 38–63. doi:10.1016/j.envsci.2018.04.010
- Alaerts, G. J., & Kaspersma, J. M. (2022). Facing global transitions in water management: advances in knowledge and capacity development and towards adaptive approaches. *WATER POLICY*, 24(5, SI), 685–707. doi:10.2166/wp.2022.301
- Andrew, J. T., & Sauquet, E. (2017). Climate Change Impacts and Water Management Adaptation in Two Mediterranean-Climate Watersheds: Learning from the Durance and Sacramento Rivers. *WATER*, 9(2). doi:10.3390/w9020126
- Azhoni, A., Jude, S., & Holman, I. (2018). Adapting to climate change by water management organisations: Enablers and barriers. *JOURNAL OF HYDROLOGY*, 559, 736–748.
doi:10.1016/j.jhydrol.2018.02.047
- Baena-Ruiz, L., Pulido-Velazquez, D., Collados-Lara, A.-J., Renau-Prunonosa, A., Morell, I., Senent-Aparicio, J., & Llopis-Albert, C. (2020). Summarizing the impacts of future potential global change scenarios on seawater intrusion at the aquifer scale. *ENVIRONMENTAL EARTH SCIENCES*, 79(5). doi:10.1007/s12665-020-8847-2
- Balaz, V., Dokupilova, D., & Filcak, R. (2021). Participatory multi-criteria methods for adaptation to climate change. *MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE*, 26(4). doi:10.1007/s11027-021-09955-4

- Bauer, A., & Steurer, R. (2015). National Adaptation Strategies, what else? Comparing adaptation mainstreaming in German and Dutch water management. *REGIONAL ENVIRONMENTAL CHANGE*, 15(2), 341–352. doi:10.1007/s10113-014-0655-3
- Binesh, N., Niksokhan, M. H., Sarang, A., & Rauch, W. (2019). Improving sustainability of urban drainage systems for climate change adaptation using best management practices: a case study of Tehran, Iran. *HYDROLOGICAL SCIENCES JOURNAL-JOURNAL DES SCIENCES HYDROLOGIQUES*, 64(4), 381–404. doi:10.1080/02626667.2019.1585857
- Biswas, R. R., Sharma, R., & Gyasi-Agyei, Y. (2022). Adaptation to climate change: A study on regional urban water management and planning practice. *JOURNAL OF CLEANER PRODUCTION*, 355. doi:10.1016/j.jclepro.2022.131643
- Bojovic, D., Giupponi, C., Klug, H., Morper-Busch, L., Cojocar, G., & Schoerghofer, R. (2018). An online platform supporting the analysis of water adaptation measures in the Alps. *JOURNAL OF ENVIRONMENTAL PLANNING AND MANAGEMENT*, 61(2), 214–229. doi:10.1080/09640568.2017.1301251
- Bonelli, S., Vicuna, S., Meza, F. J., Gironas, J., & Barton, J. (2014). Incorporating climate change adaptation strategies in urban water supply planning: the case of central Chile. *JOURNAL OF WATER AND CLIMATE CHANGE*, 5(3), 357–376. doi:10.2166/wcc.2014.037
- Bormann, H., Ahlhorn, F., & Klenke, T. (2012). Adaptation of water management to regional climate change in a coastal region - Hydrological change vs. community perception and strategies. *JOURNAL OF HYDROLOGY*, 454, 64–75. doi:10.1016/j.jhydrol.2012.05.063
- Buehler, M. M., Sebald, C., Rechid, D., Baier, E., Michalski, A., Rothstein, B., ... Buziek, G. (2021). Application of Copernicus Data for Climate-Relevant Urban Planning Using the

Example of Water, Heat, and Vegetation. *REMOTE SENSING*, 13(18).

doi:10.3390/rs13183634

Ceccato, L., Giannini, V., & Giupponi, C. (2011). Participatory assessment of adaptation strategies to flood risk in the Upper Brahmaputra and Danube river basins.

ENVIRONMENTAL SCIENCE & POLICY, 14(8), 1163–1174.

doi:10.1016/j.envsci.2011.05.016

Chen, N., Hong, H., & Gao, X. (2021). Securing drinking water resources for a coastal city under global change: Scientific and institutional perspectives. *OCEAN & COASTAL*

MANAGEMENT, 207. doi:10.1016/j.ocecoaman.2018.02.023

Chen, P.-Y., Tung, C.-P., & Li, Y.-H. (2017). Low Impact Development Planning and

Adaptation Decision-Making under Climate Change for a Community against Pluvial

Flooding. *WATER*, 9(10). doi:10.3390/w9100756

Claruis, M. H., Fatichi, S., Allan, A., Fuhrer, J., Stoffel, M., Romerio, F., ... Toreti, A. (2014).

Governing and managing water resources under changing hydro-climatic contexts: The case of the upper Rhone basin. *ENVIRONMENTAL SCIENCE & POLICY*, 43(S1), 56–67.

doi:10.1016/j.envsci.2013.11.005

Conte, G., Bolognesi, A., Bragalli, C., Branchini, S., De Carli, A., Lenzi, C., ... Principi, I.

(2012). Innovative Urban Water Management as a Climate Change Adaptation Strategy:

Results from the Implementation of the Project "Water Against Climate Change

(WATACLIC)". *WATER*, 4(4), 1025–1038. doi:10.3390/w4041025

Cosens, B., Gunderson, L., Allen, C., & Benson, M. H. (2014). Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change.

SUSTAINABILITY, 6(4), 2338–2356. doi:10.3390/su6042338

- Daniell, K. A., Costa, M. A. M., Ferrand, N., Kingsborough, A. B., Coad, P., & Ribarova, I. S. (2011). Aiding multi-level decision-making processes for climate change mitigation and adaptation. *REGIONAL ENVIRONMENTAL CHANGE*, *11*(2), 243–258.
doi:10.1007/s10113-010-0162-0
- Davis, F. W., & Chornesky, E. A. (SEP-OCT 2014). Adapting to climate change in California. *BULLETIN OF THE ATOMIC SCIENTISTS*, *70*(5), 62–73.
doi:10.1177/0096340214546839
- de Bruin, K., Dellink, R. B., Ruijs, A., Bolwidt, L., van Buuren, A., Graveland, J., ... van Ierland, E. C. (2009). Adapting to climate change in The Netherlands: an inventory of climate adaptation options and ranking of alternatives. *CLIMATIC CHANGE*, *95*(1–2), 23–45. doi:10.1007/s10584-009-9576-4
- de Loe, R. C., & Kreutzwiser, R. D. (2000). Climate variability, climate change and water resource management in the Great Lakes. *CLIMATIC CHANGE*, *45*(1), 163–179.
doi:10.1023/A:1005649219332
- Disch, J., Kay, P., & Mortsch, L. (SUM 2012). A Resiliency Assessment of Ontario's Low-water Response Mechanism: Implications for Addressing Management of Low-water Under Potential Future Climate Change. *CANADIAN WATER RESOURCES JOURNAL*, *37*(2), 105–123. doi:10.4296/cwrj3702916
- Doroszkiwicz, J., & Romanowicz, R. J. (2017). Guidelines for the adaptation to floods in changing climate. *ACTA GEOPHYSICA*, *65*(4), 849–861. doi:10.1007/s11600-017-0050-9
- Durovic, B., Bizjak, A., & Kobold, M. (2016). Climate Change: Towards an Adaptive Water Management in Slovenia. In J. Feher (Ed.), *WATERSHED AND RIVER BASIN*

MANAGEMENT (pp. 76–85). ETELE UT 59-61, BUDAPEST, H-1119, HUNGARY:
TRIVENT PUBLISHER.

Eakin, H. C., Parajuli, J., Hernandez Aguilar, B., & Yogya, Y. (2022). Attending to the social-political dimensions of urban flooding in decision-support research: A synthesis of contemporary empirical cases. *WILEY INTERDISCIPLINARY REVIEWS-CLIMATE CHANGE*, *13*(1). doi:10.1002/wcc.743

Errigo, M. F. (2018). THE ADAPTING CITY RESILIENCE THROUGH WATER DESIGN IN ROTTERDAM. *TEMA-JOURNAL OF LAND USE MOBILITY AND ENVIRONMENT*, *11*(1), 51–64. doi:10.6092/1970-9870/5402

Escriva-Bou, A., Pulido-Velazquez, M., & Pulido-Velazquez, D. (2017). Economic Value of Climate Change Adaptation Strategies for Water Management in Spain's Jucar Basin. *JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT*, *143*(5). doi:10.1061/(ASCE)WR.1943-5452.0000735

Fernandez Escalante, E., Sebastian Sauto, J. S., & Calero Gil, R. (2019). Sites and Indicators of MAR as a Successful Tool to Mitigate Climate Change Effects in Spain. *WATER*, *11*(9). doi:10.3390/w11091943

Francesch-Huidobro, M., Dabrowski, M., Tai, Y., Chan, F., & Stead, D. (2017). Governance challenges of flood-prone delta cities: Integrating flood risk management and climate change in spatial planning. *PROGRESS IN PLANNING*, *114*, 1–27. doi:10.1016/j.progress.2015.11.001

Fratini, C. F., Elle, M., Jensen, M. B., & Mikkelsen, P. S. (2012). A conceptual framework for addressing complexity and unfolding transition dynamics when developing sustainable

- adaptation strategies in urban water management. *WATER SCIENCE AND TECHNOLOGY*, 66(11), 2393–2401. doi:10.2166/wst.2012.442
- Fu, G., Zhang, C., Hall, J. W., & Butler, D. (2023). Are sponge cities the solution to China's growing urban flooding problems? *WILEY INTERDISCIPLINARY REVIEWS-WATER*, 10(1). doi:10.1002/wat2.1613
- Garnier, M., & Holman, I. (2019). Critical Review of Adaptation Measures to Reduce the Vulnerability of European Drinking Water Resources to the Pressures of Climate Change. *ENVIRONMENTAL MANAGEMENT*, 64(2), 138–153. doi:10.1007/s00267-019-01184-5
- Glenk, K., & Fischer, A. (2010). Insurance, prevention or just wait and see? Public preferences for water management strategies in the context of climate change. *ECOLOGICAL ECONOMICS*, 69(11), 2279–2291. doi:10.1016/j.ecolecon.2010.06.022
- Grothmann, T., Grecksch, K., Wings, M., & Siebenhuener, B. (2013). Assessing institutional capacities to adapt to climate change: integrating psychological dimensions in the Adaptive Capacity Wheel. *NATURAL HAZARDS AND EARTH SYSTEM SCIENCES*, 13(12), 3369–3384. doi:10.5194/nhess-13-3369-2013
- Haasnoot, M., Middelkoop, H., van Beek, E., & van Deursen, W. P. A. (NOV-DEC 2011). A Method to Develop Sustainable Water Management Strategies for an Uncertain Future. *SUSTAINABLE DEVELOPMENT*, 19(6), 369–381. doi:10.1002/sd.438
- Hallegatte, S. (2010). Uncertainties in the Cost-Benefit Analysis of Adaptation Measures, and Consequences for Decision Making. In I. Linkov & T. S. Bridges (Eds.), *CLIMATE: GLOBAL CHANGE AND LOCAL ADAPTATION* (pp. 169–192). doi:10.1007/978-94-007-1770-1_10

- Hamlet, A. F. (2011). Assessing water resources adaptive capacity to climate change impacts in the Pacific Northwest Region of North America. *HYDROLOGY AND EARTH SYSTEM SCIENCES*, 15(5), 1427–1443. doi:10.5194/hess-15-1427-2011
- Hasse, J. U., & Weingaertner, D. E. (2016). From vision to action: roadmapping as a strategic method and tool to implement climate change adaptation - the example of the roadmap 'water sensitive urban design 2020'. *WATER SCIENCE AND TECHNOLOGY*, 73(9), 2251–2259. doi:10.2166/wst.2016.065
- He, X. (2013). Mainstreaming adaptation in integrated water resources management in China: from challenge to change. *WATER POLICY*, 15(6), 895–921. doi:10.2166/wp.2013.084
- Hernandez-Hernandez, M., Olcina, J., & Morote, A.-F. (2020). Urban Stormwater Management, a Tool for Adapting to Climate Change: From Risk to Resource. *WATER*, 12(9). doi:10.3390/w12092616
- Herrfahrdt-Paehle, E. (2010). South African water governance between administrative and hydrological boundaries. *CLIMATE AND DEVELOPMENT*, 2(2, SI), 111–127. doi:10.3763/cdev.2010.0038
- Huntjens, P., Lebel, L., Pahl-Wostl, C., Camkin, J., Schulze, R., & Kranz, N. (2012). Institutional design propositions for the governance of adaptation to climate change in the water sector. *GLOBAL ENVIRONMENTAL CHANGE-HUMAN AND POLICY DIMENSIONS*, 22(1), 67–81. doi:10.1016/j.gloenvcha.2011.09.015
- Huntjens, P., Pahl-Wostl, C., Rihoux, B., Schlueter, M., Flachner, Z., Neto, S., ... Kiti, I. N. (MAY-JUN 2011). Adaptive Water Management and Policy Learning in a Changing Climate: a Formal Comparative Analysis of Eight Water Management Regimes in Europe,

- Africa and Asia. *ENVIRONMENTAL POLICY AND GOVERNANCE*, 21(3), 145–163.
doi:10.1002/eet.571
- Hurlimann, A., & Wilson, E. (2018). Sustainable Urban Water Management under a Changing Climate: The Role of Spatial Planning. *WATER*, 10(5). doi:10.3390/w10050546
- Iglesias, A., Garrote, L., Diz, A., Schlickerrieder, J., & Martin-Carrasco, F. (2011). Re-thinking water policy priorities in the Mediterranean region in view of climate change. *ENVIRONMENTAL SCIENCE & POLICY*, 14(7, SI), 744–757.
doi:10.1016/j.envsci.2011.02.007
- Iglesias, A., Garrote, L., Flores, F., & Moneo, M. (2007). Challenges to manage the risk of water scarcity and climate change in the Mediterranean. *WATER RESOURCES MANAGEMENT*, 21(5), 775–788. doi:10.1007/s11269-006-9111-6
- Jacobs, J. C. J. (2012). The Rotterdam approach: connecting water with opportunities. In C. Howe & C. Mitchell (Eds.), *WATER SENSITIVE CITIES* (pp. 251–263). ALLIANCE HOUSE, 12 CAXTON ST, LONDON SW1H 0QS, ENGLAND: IWA PUBLISHING.
- Jafroudi, M. (2020). A legal obligation to adapt transboundary water agreements to climate change? *WATER POLICY*, 22(5), 717–732. doi:10.2166/wp.2020.212
- Jonsson, A. C., Rydhagen, B., Wilk, J., Feroz, A. R., Rani, A., & Kumar, A. (2015). CLIMATE CHANGE ADAPTATION IN URBAN INDIA: THE INCLUSIVE FORMULATION OF LOCAL ADAPTATION STRATEGIES. *GLOBAL NEST JOURNAL*, 17(1, SI), 61–71.
- Kahil, M. T., Ward, F. A., Albiac, J., Eggleston, J., & Sanz, D. (2016). Hydro-economic modeling with aquifer-river interactions to guide sustainable basin management. *JOURNAL OF HYDROLOGY*, 539, 510–524. doi:10.1016/j.jhydrol.2016.05.057

- Kamperman, H., & Biesbroek, R. (2017). Measuring Progress on Climate Change Adaptation Policy by Dutch Water Boards. *WATER RESOURCES MANAGEMENT*, 31(14), 4557–4570. doi:10.1007/s11269-017-1765-8
- Keessen, A., Vink, M. J., Wiering, M., Boezeman, D., Ernst, W., Mees, H., ... Van Eerd, M. C. J. (2016). Solidarity in water management. *ECOLOGY AND SOCIETY*, 21(4). doi:10.5751/ES-08874-210435
- Khacheba, R., Cherfaoui, M., Hartani, T., & Drouiche, N. (2018). The nexus approach to water-energy-food security: an option for adaptation to climate change in Algeria. *DESALINATION AND WATER TREATMENT*, 131, 30–33. doi:10.5004/dwt.2018.22950
- Khaniya, B., Gunathilake, M. B., & Rathnayake, U. (2021). Ecosystem-Based Adaptation for the Impact of Climate Change and Variation in the Water Management Sector of Sri Lanka. *MATHEMATICAL PROBLEMS IN ENGINEERING*, 2021. doi:10.1155/2021/8821329
- Kim, Y., Eisenberg, D. A., Bondank, E. N., Chester, M. V., Mascaro, G., & Underwood, B. S. (2017). Fail-safe and safe-to-fail adaptation: decision-making for urban flooding under climate change. *CLIMATIC CHANGE*, 145(3–4), 397–412. doi:10.1007/s10584-017-2090-1
- Kirono, D. G. C., Larson, S., Tjandraatmadja, G., Leitch, A., Neumann, L., Maheepala, S., ... Selintung, M. (2014). Adapting to climate change through urban water management: a participatory case study in Indonesia. *REGIONAL ENVIRONMENTAL CHANGE*, 14(1, SI), 355–367. doi:10.1007/s10113-013-0498-3
- Kirshen, P., Aytur, S., Hecht, J., Walker, A., Burdick, D., Jones, S., ... Mather, L. (2018). Integrated urban water management applied to adaptation to climate change. *URBAN CLIMATE*, 24, 247–263. doi:10.1016/j.uclim.2018.03.005

- Koch, H., Kaltofen, M., Kaden, S., & Gruenewald, U. (2010). Effects of global change and adaptation options for water resources management in the Czech part of the River Elbe basin. In E. Servat, S. Demuth, A. Dezetter, & T. Daniell (Eds.), *GLOBAL CHANGE: FACING RISKS AND THREATS TO WATER RESOURCES* (p. 244+). INST OF HYDROLOGY, WALLINGFORD OX10 8BB, ENGLAND: INT ASSOC HYDROLOGICAL SCIENCES.
- Kopprio, G. A., Hugo Freije, R., Arias-Schreiber, M., & Lara, R. J. (2014). An ecohydrological adaptive approach to a salt lake in the semiarid grasslands of Argentina: future management perspectives. *SUSTAINABILITY SCIENCE*, 9(2), 229–238.
doi:10.1007/s11625-013-0207-7
- Kourtis, I. M., Bellos, V., Kopsiaftis, G., Psiloglou, B., & Tsihrintzis, V. A. (2021). Methodology for holistic assessment of grey-green flood mitigation measures for climate change adaptation in urban basins. *JOURNAL OF HYDROLOGY*, 603(A).
doi:10.1016/j.jhydrol.2021.126885
- Kourtis, I. M., & Tsihrintzis, V. A. (2021). Adaptation of urban drainage networks to climate change: A review. *SCIENCE OF THE TOTAL ENVIRONMENT*, 771.
doi:10.1016/j.scitotenv.2021.145431
- Krysanova, V., Dickens, C., Timmerman, J., Varela-Ortega, C., Schlueter, M., Roest, K., ... Kabat, P. (2010). Cross-Comparison of Climate Change Adaptation Strategies Across Large River Basins in Europe, Africa and Asia. *WATER RESOURCES MANAGEMENT*, 24(14), 4121–4160. doi:10.1007/s11269-010-9650-8

- La Jeunesse, I., Cirelli, C., Sellami, H., Aubin, D., Deidda, R., & Baghdadi, N. (2015). Is the governance of the Thau coastal lagoon ready to face climate change impacts? *OCEAN & COASTAL MANAGEMENT*, *118*(B), 234–246. doi:10.1016/j.ocecoaman.2015.05.014
- Lebel, L. (2013). Local knowledge and adaptation to climate change in natural resource-based societies of the Asia-Pacific. *MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE*, *18*(7), 1057–1076. doi:10.1007/s11027-012-9407-1
- Lebel, L., Xu, J., Bastakoti, R. C., & Lamba, A. (2010). Pursuits of adaptiveness in the shared rivers of Monsoon Asia. *INTERNATIONAL ENVIRONMENTAL AGREEMENTS-POLITICS LAW AND ECONOMICS*, *10*(4, SI), 355–375. doi:10.1007/s10784-010-9141-7
- Lee, J.-S., & Kim, J. W. (2018). Assessing Strategies for Urban Climate Change Adaptation: The Case of Six Metropolitan Cities in South Korea. *SUSTAINABILITY*, *10*(6). doi:10.3390/su10062065
- Lowe, R., Urich, C., Domingo, N. S., Mark, O., Deletic, A., & Arnbjerg-Nielsen, K. (2017). Assessment of urban pluvial flood risk and efficiency of adaptation options through simulations - A new generation of urban planning tools. *JOURNAL OF HYDROLOGY*, *550*, 355–367. doi:10.1016/j.jhydrol.2017.05.009
- Ludwig, F., van Slobbe, E., & Cofino, W. (2014). Climate change adaptation and Integrated Water Resource Management in the water sector. *JOURNAL OF HYDROLOGY*, *518*(B, SI), 235–242. doi:10.1016/j.jhydrol.2013.08.010
- Madonsela, B., Koop, S., van Leeuwen, K., & Carden, K. (2019). Evaluation of Water Governance Processes Required to Transition towards Water Sensitive Urban Design An Indicator Assessment Approach for the City of Cape Town. *WATER*, *11*(2). doi:10.3390/w11020292

- Manocha, N., & Babovic, V. (2018). Real options, multi-objective optimization and the development of dynamically robust adaptive pathways. *ENVIRONMENTAL SCIENCE & POLICY*, *90*, 11–18. doi:10.1016/j.envsci.2018.09.012
- Martins Pereira, L. F., Barreto, S., & Pittock, J. (2009). Participatory river basin management in the Sao Joao River, Brazil: A basis for climate change adaptation? *CLIMATE AND DEVELOPMENT*, *1*(3, SI), 261–268. doi:10.3763/cdev.2009.0026
- Mason, E., & Montalto, F. A. (2015). The overlooked role of New York City urban yards in mitigating and adapting to climate change. *LOCAL ENVIRONMENT*, *20*(12), 1412–1427. doi:10.1080/13549839.2014.907249
- Medellin-Azuara, J., Harou, J. J., Olivares, M. A., Madani, K., Lund, J. R., Howitt, R. E., ... Zhu, T. (2008). Adaptability and adaptations of California's water supply system to dry climate warming. *CLIMATIC CHANGE*, *87*(1), S75–S90. doi:10.1007/s10584-007-9355-z
- Mgquba, S. K., & Majazi, S. (2020). Climate change and its impacts on hydro-politics in transboundary basins: a case study of the Orange-Senqu River basin. *JOURNAL OF WATER AND CLIMATE CHANGE*, *11*(1), 150–165. doi:10.2166/wcc.2018.166
- Mirdashtvan, M., Najafinejad, A., Malekian, A., & Sa'doddin, A. (2021). Sustainable Water Supply and Demand Management in Semi-arid Regions: Optimizing Water Resources Allocation Based on RCPs Scenarios. *WATER RESOURCES MANAGEMENT*, *35*(15), 5307–5324. doi:10.1007/s11269-021-03004-0
- Momblanch, A., Beever, L., Srinivasalu, P., Kulkarni, A., & Holman, I. P. (2020). Enhancing production and flow of freshwater ecosystem services in a managed Himalayan River system under uncertain future climate. *CLIMATIC CHANGE*, *162*(2), 343–361. doi:10.1007/s10584-020-02795-2

- Mukheibir, P. (2010). Water Access, Water Scarcity, and Climate Change. *ENVIRONMENTAL MANAGEMENT*, 45(5), 1027–1039. doi:10.1007/s00267-010-9474-6
- Null, S. E., & Viers, J. H. (2013). In bad waters: Water year classification in nonstationary climates. *WATER RESOURCES RESEARCH*, 49(2), 1137–1148. doi:10.1002/wrcr.20097
- Olabanji, M. F., Ndarana, T., Davis, N., & Archer, E. (2020). Climate change impact on water availability in the olifants catchment (South Africa) with potential adaptation strategies. *PHYSICS AND CHEMISTRY OF THE EARTH*, 120. doi:10.1016/j.pce.2020.102939
- Pandey, D. N., Gupta, A. K., & Anderson, D. M. (2003). Rainwater harvesting as an adaptation to climate change. *CURRENT SCIENCE*, 85(1), 46–59.
- Papadaskalopoulou, C., Katsou, E., Valta, K., Moustakas, K., Malamis, D., & Dodou, M. (2015). Review and assessment of the adaptive capacity of the water sector in Cyprus against climate change impacts on water availability. *RESOURCES CONSERVATION AND RECYCLING*, 105(A), 95–112. doi:10.1016/j.resconrec.2015.10.017
- Papadimitriou, L., Holman, I. P., Dunford, R., & Harrison, P. A. (2019). Trade-offs are unavoidable in multi-objective adaptation even in a post-Paris Agreement world. *SCIENCE OF THE TOTAL ENVIRONMENT*, 696. doi:10.1016/j.scitotenv.2019.134027
- Pittock, J., Marshall, N., Capon, T., Parsons, M., Robertson, A. I., & Casaril, C. (2014). A review of Australian institutions for riparian adaptation to climate change. *JOURNAL OF WATER AND CLIMATE CHANGE*, 5(3), 315–327. doi:10.2166/wcc.2014.116
- Pittock, J. (2009). Lessons for climate change adaptation from better management of rivers. *CLIMATE AND DEVELOPMENT*, 1(3, SI), 194–211. doi:10.3763/cdev.2009.0021
- Pulido-Velazquez, M., Marcos-Garcia, P., Girard, C., Sanchis-Ibor, C., Martinez-Capel, F., Garcia-Prats, A., ... Rinaudo, J. D. (2022). A Top-Down Meets Bottom-Up Approach for

- Climate Change Adaptation in Water Resource Systems. In C. Kondrup, P. Mercogliano, F. Bosello, J. Mysiak, E. Scoccimarro, A. Rizzo, ... P. Watkiss (Eds.), *CLIMATE ADAPTATION MODELLING* (pp. 149–157). doi:10.1007/978-3-030-86211-4_18
- Pulwarty, R. S., & Maia, R. (2015). Adaptation Challenges in Complex Rivers Around the World: The Guadiana and the Colorado Basins. *WATER RESOURCES MANAGEMENT*, 29(2, SI), 273–293. doi:10.1007/s11269-014-0885-7
- Quagliolo, C., Roebeling, P., Mendonca, R., Pezzoli, A., & Comino, E. (2022). Integrating Biophysical and Economic Assessment: Review of Nature-Based Adaptation to Urban Flood Extremes. *URBAN SCIENCE*, 6(3). doi:10.3390/urbansci6030053
- Quandt, A., O’Shea, B., Oke, S., & Ololade, O. O. (2022). Policy interventions to address water security impacted by climate change: Adaptation strategies of three case studies across different geographic regions. *FRONTIERS IN WATER*, 4. doi:10.3389/frwa.2022.935422
- Rankoana, S. A. (2020). Climate change impacts on water resources in a rural community in Limpopo province, South Africa: a community-based adaptation to water insecurity. *INTERNATIONAL JOURNAL OF CLIMATE CHANGE STRATEGIES AND MANAGEMENT*, 12(5, SI), 587–598. doi:10.1108/IJCCSM-04-2020-0033
- Refsgaard, J. C., Arnbjerg-Nielsen, K., Drews, M., Halsnaes, K., Jeppesen, E., Madsen, H., ... Christensen, J. H. (2013). The role of uncertainty in climate change adaptation strategies-A Danish water management example. *MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE*, 18(3), 337–359. doi:10.1007/s11027-012-9366-6
- Rheinheimer, D. E., Null, S. E., & Viers, J. H. (2016). Climate-Adaptive Water Year Typing for Instream Flow Requirements in California’s Sierra Nevada. *JOURNAL OF WATER*

RESOURCES PLANNING AND MANAGEMENT, 142(11). doi:10.1061/(ASCE)WR.1943-5452.0000693

Rios Patron, E., Gonzalez Terrazas, D. I., & Gonzalez Mora, I. D. (2019). Climate Change and Vulnerability of Water Resources in Mexico: Challenges for Basin Management. In H. Rojas (Ed.), *WATER POLICY IN MEXICO: ECONOMIC, INSTITUTIONAL AND ENVIRONMENTAL CONSIDERATIONS* (pp. 283–307). doi:10.1007/978-3-319-76115-2_14

Rodrigues, M., & Antunes, C. (2021). Best Management Practices for the Transition to a Water-Sensitive City in the South of Portugal. *SUSTAINABILITY*, 13(5). doi:10.3390/su13052983

Rouillard, J. J., Benson, D., & Gain, A. K. (2014). Evaluating IWRM implementation success: are water policies in Bangladesh enhancing adaptive capacity to climate change impacts? *INTERNATIONAL JOURNAL OF WATER RESOURCES DEVELOPMENT*, 30(3, SI), 515–527. doi:10.1080/07900627.2014.910756

Runhaar, H., Mees, H., Wardekker, A., van der Sluijs, J., & Driessen, P. P. J. (2012). Adaptation to climate change-related risks in Dutch urban areas: stimuli and barriers. *REGIONAL ENVIRONMENTAL CHANGE*, 12(4), 777–790. doi:10.1007/s10113-012-0292-7

Sampson, D. A., Cook, E. M., Davidson, M. J., Grimm, N. B., & Iwaniec, D. M. (2020). Simulating alternative sustainable water futures. *SUSTAINABILITY SCIENCE*, 15(4), 1199–1210. doi:10.1007/s11625-020-00820-y

Sanchez-Almodovar, E., Olcina-Cantos, J., & Marti-Talavera, J. (2022). Adaptation Strategies for Flooding Risk from Rainfall Events in Southeast Spain: Case Studies from the Bajo Segura, Alicante. *WATER*, 14(2). doi:10.3390/w14020146

- Sant'Anna, C., Tilmant, A., & Pulido-Velazquez, M. (2022). A hydrologically-driven approach to climate change adaptation for multipurpose multireservoir systems. *CLIMATE RISK MANAGEMENT*, 36. doi:10.1016/j.crm.2022.100427
- Saraswat, C., Kumar, P., & Mishra, B. K. (2016). Assessment of stormwater runoff management practices and governance under climate change and urbanization: An analysis of Bangkok, Hanoi and Tokyo. *ENVIRONMENTAL SCIENCE & POLICY*, 64, 101–117. doi:10.1016/j.envsci.2016.06.018
- Sebesvari, Z., Rodrigues, S., & Renaud, F. (2017). Mainstreaming ecosystem-based climate change adaptation into integrated water resources management in the Mekong region. *REGIONAL ENVIRONMENTAL CHANGE*, 17(7), 1907–1920. doi:10.1007/s10113-017-1161-1
- Shao, W., Su, X., Lu, J., Liu, J., Yang, Z., Mei, C., ... Lu, J. (2021). Urban Resilience of Shenzhen City under Climate Change. *ATMOSPHERE*, 12(5). doi:10.3390/atmos12050537
- Slamova, R., Martinkova, M., & Krysanova, V. (2010). ADAPTATION STRATEGY TO HYDROLOGICAL IMPACT OF CLIMATE CHANGE. *JOURNAL OF HYDROLOGY AND HYDROMECHANICS*, 58(4), 233–244. doi:10.2478/v10098-010-0022-0
- Stagge, J. H., & Moglen, G. E. (2017). Water Resources Adaptation to Climate and Demand Change in the Potomac River. *JOURNAL OF HYDROLOGIC ENGINEERING*, 22(11). doi:10.1061/(ASCE)HE.1943-5584.0001579
- Steinschneider, S., & Brown, C. (2012). Dynamic reservoir management with real-option risk hedging as a robust adaptation to nonstationary climate. *WATER RESOURCES RESEARCH*, 48. doi:10.1029/2011WR011540

- Sterle, K., Jose, L., Coors, S., Singletary, L., Pohll, G., & Rajagopal, S. (2020). Collaboratively Modeling Reservoir Reoperation to Adapt to Earlier Snowmelt Runoff. *JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT*, 146(1).
doi:10.1061/(ASCE)WR.1943-5452.0001136
- Sterle, K., Hatchett, B. J., Singletary, L., & Pohll, G. (2019). Hydroclimate Variability in Snow-Fed River Systems: Local Water Managers' Perspectives on Adapting to the New Normal. *BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY*, 100(6), 1029–1048.
doi:10.1175/BAMS-D-18-0031.1
- Sterle, K., & Singletary, L. (2017). Adapting to Variable Water Supply in the Truckee-Carson River System, Western USA. *WATER*, 9(10). doi:10.3390/w9100768
- Stuart-Hill, S. I., & Schulze, R. E. (2010). Does South Africa's water law and policy allow for climate change adaptation? *CLIMATE AND DEVELOPMENT*, 2(2, SI), 128–144.
doi:10.3763/cdev.2010.0035
- Swart, R., & Raes, F. (2007). Making integration of adaptation and mitigation work: mainstreaming into sustainable development policies? *CLIMATE POLICY*, 7(4), 288–303.
doi:10.1080/14693062.2007.9685657
- Szpak, A., Modrzyńska, J., & Piechowiak, J. (2022). Resilience of Polish cities and their rainwater management policies. *URBAN CLIMATE*, 44. doi:10.1016/j.uclim.2022.101228
- Tan, R. R., & Foo, D. C. Y. (2018). Integrated multi-scale water management as a climate change adaptation strategy. *CLEAN TECHNOLOGIES AND ENVIRONMENTAL POLICY*, 20(6), 1123–1125. doi:10.1007/s10098-018-1551-1
- Tansey, M., Van Lienden, B. J., Munevar, A., Das, T., & Nickel, A. (2017). Sacramento and San Joaquin Basins Study: Assessing Climate Change Impacts and Adaptation Strategies in

California's Central Valley Water System. In C. N. Dunn & B. VanWeele (Eds.), *WORLD ENVIRONMENTAL AND WATER RESOURCES CONGRESS 2017: WATERSHED MANAGEMENT, IRRIGATION AND DRAINAGE, AND WATER RESOURCES PLANNING AND MANAGEMENT* (pp. 558–566). UNITED ENGINEERING CENTER, 345 E 47TH ST, NEW YORK, NY 10017-2398 USA: Amer Soc Civil Engineers; Amer Soc Civil Engineers, Environm & Water Resources Inst.

Timmerman, J., Matthews, J., Koepfel, S., Valensuela, D., & Vlaanderen, N. (2017). Improving governance in transboundary cooperation in water and climate change adaptation. *WATER POLICY*, *19*(6), 1014–1029. doi:10.2166/wp.2017.156

Timmerman, J. G., Koepfel, S., Bernardini, F., & Buntsma, J. J. (2011). Adaptation to Climate Change: Challenges for Transboundary Water Management. In W. L. Filho (Ed.), *ECONOMIC, SOCIAL AND POLITICAL ELEMENTS OF CLIMATE CHANGE* (pp. 523–541). doi:10.1007/978-3-642-14776-0_32

Tosun, J., & Leopold, L. (2019). Aligning Climate Governance with Urban Water Management: Insights from Transnational City Networks. *WATER*, *11*(4). doi:10.3390/w11040701

Urich, C., & Rauch, W. (2014). Exploring critical pathways for urban water management to identify robust strategies under deep uncertainties. *WATER RESEARCH*, *66*, 374–389. doi:10.1016/j.watres.2014.08.020

Van Alphen, H.-J., Strehl, C., Vollmer, F., Interwies, E., Petersen, A., Goerlitz, S., ... Bergsma, E. (2021). Selecting and analysing climate change adaptation measures at six research sites across Europe. *NATURAL HAZARDS AND EARTH SYSTEM SCIENCES*, *21*(7), 2145–2161. doi:10.5194/nhess-21-2145-2021

- van der Brugge, R., & de Graaf, R. (2010). Linking water policy innovation and urban renewal: the case of Rotterdam, The Netherlands. *WATER POLICY*, 12(3), 381–400.
doi:10.2166/wp.2010.037
- Veraart, J. A., van Ierland, E. C., Werners, S. E., Verhagen, A., de Groot, R. S., Kuikman, P. J., & Kabat, P. (2010). Climate Change Impacts on Water Management and Adaptation Strategies in The Netherlands: Stakeholder and Scientific Expert Judgements. *JOURNAL OF ENVIRONMENTAL POLICY & PLANNING*, 12(2), 179–200.
doi:10.1080/15239081003722163
- Vink, M. J., Benson, D., Boezeman, D., Cook, H., Dewulf, A., & Termeer, C. (2015). Do state traditions matter? Comparing deliberative governance initiatives for climate change adaptation in Dutch corporatism and British pluralism. *JOURNAL OF WATER AND CLIMATE CHANGE*, 6(1), 71–88. doi:10.2166/wcc.2014.119
- Wang, M., Zhang, D. Q., Su, J., Trzcinski, A. P., Dong, J. W., & Tan, S. K. (2017). Future Scenarios Modeling of Urban Stormwater Management Response to Impacts of Climate Change and Urbanization. *CLEAN-SOIL AIR WATER*, 45(10).
doi:10.1002/clen.201700111
- Xiao-jun, W., Jian-yun, Z., Shahid, S., Xing-hui, X., Rui-min, H., & Man-ting, S. (2014). Catastrophe theory to assess water security and adaptation strategy in the context of environmental change. *MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE*, 19(4), 463–477. doi:10.1007/s11027-012-9443-x
- Wiering, M., & Winnubst, M. (2017). The conception of public interest in Dutch flood risk management: Untouchable or transforming? *ENVIRONMENTAL SCIENCE & POLICY*, 73, 12–19. doi:10.1016/j.envsci.2017.03.002

- Wilby, R. L., & Wood, P. J. (2012). Introduction to adapting water management to climate change: putting our science into practice. *AREA*, 44(4), 394–399. doi:10.1111/j.1475-4762.2012.01133.x
- Wilby, Robert L. (2020). Resilience Viewed through the Lens of Climate Change and Water Management. *WATER*, 12(9). doi:10.3390/w12092510
- Xie, K., Kim, J.-S., Hu, L., Chen, H., Xu, C.-Y., Lee, J. H., ... Liu, Y. (2023). Intelligent Scheduling of Urban Drainage Systems: Effective Local Adaptation Strategies for Increased Climate Variability. *WATER RESOURCES MANAGEMENT*, 37(1), 91–111. doi:10.1007/s11269-022-03357-0
- Yang, Y.-C. E., Brown, C., Yu, W., Wescoat, J., Jr, & Ringler, C. (2014). Water governance and adaptation to climate change in the Indus River Basin. *JOURNAL OF HYDROLOGY*, 519(C, SI), 2527–2537. doi:10.1016/j.jhydrol.2014.08.055
- Ziervogel, G., Shale, M., & Du, M. (2010). Climate change adaptation in a developing country context: The case of urban water supply in Cape Town. *CLIMATE AND DEVELOPMENT*, 2(2, SI), 94–110. doi:10.3763/cdev.2010.0036