

CURRICULUM VITAE

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Claudia Pahl-Wostl is full professor for resources management at the Institute of Geography, Faculty of Social Sciences and Director of the interdisciplinary research centre Institute for Environmental Systems Research (USF) at the University of Osnabrück, Germany. This interdisciplinary institute is associated with the department of mathematics and computer science. Its goal is to promote research and teaching in systems science at the interface between the natural and socio-economic sciences.

Since October 2001 the activities in the socio-economic area and in integrated modelling and analysis at USF are extended by the chair of resources management, initially an endowed chair of the German Environmental Foundation. Over the past decade an internationally leading interdisciplinary research programme on governance and adaptive and integrated resources management of water resources and the role of social and societal learning has been established. The research programme builds on foundations in systems science, which explicitly acknowledge the complex and often unpredictable dynamics of the systems to be managed. In 2012 the Bode Foundation Water Management Prize was awarded to Prof. Pahl-Wostl for the pioneering interdisciplinary work on “Governance in times of change” and comparative analyses of water governance in large river basins. In recent years research has extended to the Water-Energy-Food Nexus. In 2020 she received the Highly Cited Researchers Award for being one of most highly cited researchers in her field worldwide.

The interdisciplinary research team comprises scientists with diverse backgrounds in geography, regional planning, social psychology, political science, law, agricultural economics, system science, computer science, environmental science and integrated assessment.

Before moving to USF Claudia Pahl-Wostl worked for more than ten years in the field of mathematical modelling, integrated assessment and human ecology at the Swiss Federal Institute for Science and Technology, Zürich and the Swiss Federal Institute for Aquatic Science and Technology, EAWAG. She was Co-Chair of the Scientific Steering Committee of the GWSP (Global Water System Project - a joint project of the ESSP – WCRP, IGBP, IHDP and DIVERSITAS) and is now member of the executive committee of the solution-oriented “Sustainable Water Future Programme”, a core project of Future Earth. Claudia Pahl-Wostl is foundation-president and now vice-president of TIAS, The Integrated Assessment Society. TIAS promotes the community of scientists, analysts and practitioners who develop and use integrated assessment which can be defined as the scientific “meta-discipline” that integrates knowledge about a problem domain and makes it available for policy development, and societal learning and decision making processes.

Claudia Pahl-Wostl has participated in and coordinated several European projects. She was coordinator of the EU project HarmoniCOP (Harmonizing Collaborative Planning on the role of social learning and IC-tools in participation with specific emphasis on the European Water Framework Directive), member of the core group of the EU Concerted Action Harmonica (Harmonizing Modelling Tools at Catchment Scale – developing guidance for the implementation of the European Water

Framework Directive) and coordinator of the EU project cluster on the Human Dimension in Water Management.

She coordinated the Integrated Project **NEWATER** (New methods for adaptive water management). **NEWATER** developed new methods for integrated water management taking into account the complexity of the river basins to be managed and the difficulty to predict the factors influencing them. **NEWATER** focused in particular on the transition from current regimes of water management in a river basin to more integrated, adaptive approaches. The project had case studies in Europe, Africa and Central Asia, where new methods were developed and tested in participatory settings. The project involved forty partner organizations. The project has certainly led to spin-off effects in these regions in the form of recommendations to include more adaptive approaches in the implementation of policies and innovative approaches to manage floods and droughts. She coordinated the EU project **Twin2Go** (Coordinating Twinning partnerships towards more adaptive governance in river basins) which aimed at drawing general lessons on adaptive water governance in the context of climate change from a range of projects on integrated water resources management. The analyses identified factors influencing performance and assess potential and limitations of transferability of insights among basins with different economic, environmental, social and political characteristics.

She coordinated the project **STEER** (Increasing Good Governance for Achieving the Objectives of Integrated Water Resources Management). **STEER** developed new concepts to implement a diagnostic approach and to overcome coordination deficits in water governance. **STEER** supports the implementation of the SDGs, in particular SDG 6.

PROFESSIONAL EXPERIENCE

2019- present	Director of the Institute for Environmental Systems Research
2017-2019	Visiting Professor at the University of Saskatchewan, Saskatoon, Canada
2013-2015	Senior Research Associate, IIASA (International Institute of Applied Systems Analysis), Laxenburg, Austria
2011-2015	Director of the Institute of Environmental Systems Research
2010-2014	Senior Research Fellow Resilience Centre Stockholm, Sweden
2001-present	Professor for Resources Management at the interdisciplinary Institute of Environmental Systems Research, University of Osnabrück, Germany
2000	Head of the Department of System Analysis, Integrated Assessment and Modelling at EAWAG
1997-1999	Head of the Department of Environmental Physics at EAWAG
1996-2000	Head of Research Group on Integrated Assessment and Human Ecology at the Swiss Federal Institute of Aquatic Sciences and Technology (EAWAG)
1989-1996	Head of a Research Group on Theoretical Ecology and Complex Systems Analysis, Swiss Federal Institute of Technology, Zürich
1986-1987	Research Associate, SANDOZ Ltd., Basle, Switzerland
1983-1986	Research Assistant, University Basle

ACADEMIC DEGREES

1995	Habilitation at the Swiss Federal Institute of Technology, Zürich in the field of Theoretical Ecology and Complex Systems Analysis
1987	Post Graduate Diploma in Aquatic Sciences Swiss Federal Institute of Technology, Zürich and Swiss Federal Institute for Aquatic Science and Technology, Dübendorf

- 1986 PhD. Biocenter of the University of Basel, Switzerland (1983-1986) - in the area of systemic approaches to study regulation of metabolic disease. Summa cum Laude.
- 1983 Diploma in Chemistry and Molecular Biology, Ruprechts-Karl-University, Heidelberg, Germany (1977-1983) with distinction.

SCIENTIFIC PUBLICATIONS

Guest editor of special issues in peer-reviewed journals:

Published:

- Pahl-Wostl, C., Bhaduri, A. and Bruns, A. 2018. Special Issue of *Environmental Science and Policy* on “The Nexus of Water, Energy and Food – an Environmental Governance Perspective”.
- Gupta, J. and Pahl-Wostl, C. 2013 Special Feature of *Ecology and Society* on “Global Water Governance: Challenges and Future Scope”. Editorial. *Ecology and Society* **18**(4): 54. <http://dx.doi.org/10.5751/ES-06115-180454>
- Jäger, J., Holm, P., O’Brien, K., Palsson, G. and Pahl-Wostl, C. 2013. Special Issue of *Environmental Science and Policy* on “Responses to environmental and societal challenges for our unsustainable earth”. 28.
- Vörösmarty, C, Pahl-Wostl, C. and Bhaduri, A. 2013. Special Issue of *Current Opinion in Environmental Sustainability* on “Water in the Anthropocene: New Perspectives for Global Sustainability”. *COSUST* 5(6):535-538.
- Pahl-Wostl, C., and Ross, A. 2010. Special Issue of *Regional Environmental Change* on “Comparative Analyses of River Basin Governance” 10:4.
- Pahl-Wostl, C. and Kranz, N. 2010. Special Issue of *Environmental Science and Policy* on “Water Governance in Times of Change”: 13:7.
- Pahl-Wostl, C., Jeffrey, P., and Sendzimir, J. 2009. Special Issue of *Ecology and Society* on “Adaptive Water Management”. URL: <http://www.ecologyandsociety.org/viewissue.php?sf=31>
- Newig, J., Haberl, H., Pahl-Wostl, C. and Rothman, D. 2008. Special Issue of *Systemic Practice and Action Research* on “Formalised and non-formalised participatory methods in natural resource management”. 21 (6).
- Pahl-Wostl, C., Gupta, J., and Petry, D. 2008. Special Issue of *Global Governance* on “Global Governance of Water: Trends, Processes and Ideas for the Future.” *Global Governance* 14 (4).
- Pahl-Wostl, C., Mostert, E., and Tabara, D. 2008. Special Issue of *Ecology and Society* on “Social Learning in Water Resources Management”. URL: <http://www.ecologyandsociety.org/viewissue.php?sf=28>
- Borowski, I. and Pahl-Wostl, C. 2007. Special Issue of *Water Resources Management* on “Methods for participatory water resources management”. 21 (7).
- Pahl-Wostl, C., Hare, M. and Sendzimir, J. 2007. Special Issue of *Environmental Modelling and Software* on “The Implications of Complexity for Integrated Resources Management - The Second Biannual Meeting of the International Environmental Modelling and Software Society: Complexity and Integrated Resources Management”. Volume 22, Issue 5, May 2007, Pages 559-560.
- Pahl-Wostl, C. and Dowlatabadi, H. 2005. Special issue of *Integrated Assessment* on “Challenges for Integrated Assessment. *Integrated Assessment* 5 (1).

- Pahl-Wostl, C., Hoff, H., Meybeck, M. and Sorooshian, S. 2002. Special issue of *Aquatic Sciences* on: Vulnerability of Water Resources to Environmental Change - A Systems' Approach. *Aquatic Sciences*: 64 (4).
- Pahl-Wostl, C. 2002. Special issue of *Integrated Assessment* on “Integrated Assessment and the European Water Framework Directive”. *Integrated Assessment* 3 (1).
- Jaeger, C.C., Pahl-Wostl, C. and Huw Davies, H. 2000. Special issue of *Integrated Assessment* on “Integrated Assessment of Climate Change in the Alpine Region”. *Integrated Assessment* 1 (4).

Peer reviewed publications:

Publications in peer reviewed journals since 2000

- Pahl-Wostl, C., Gorris, P., Jager, N., Koch, L., Lebel, L., Stein, C., Venghaus, S., Withanachchi, S. 2021. Scale-related governance challenges in the water–energy–food nexus: toward a diagnostic approach. *Sustainability Science* 16 (2):615-629. doi:10.1007/s11625-020-00888-6
- Baulenas, E., Baiges, T., Cervera, T. and Pahl-Wostl C. 2021. How do structural and agent-based factors influence the effectiveness of incentive policies? A spatially explicit agent-based model to optimize woodland-for-water PES policy design at the local level. *Ecology and Society*, 26 (2):10. [online] URL: <https://www.ecologyandsociety.org/vol26/iss2/art10/>
- Herrfahrtdt-Pähle, E., Schlüter, M., Olsson, P., Folke, C., Gelcich, S. and Pahl-Wostl, C. 2020. Sustainability transformations: socio-political shocks as opportunities for governance transitions. *Global Environmental Change*, 63:102097. doi:<https://doi.org/10.1016/j.gloenvcha.2020.102097>
- Pahl-Wostl, C., Knieper, C., Lukat, E., Meergans, F., Schoderer, M., Schütze, N., Schweigatz, D., Dombrowsky, I., Lenschow, A., Stein, U., Thiel, A., Tröltzsch, J., Vidaurre, R. 2020). Enhancing the capacity of water governance to deal with complex management challenges: A framework of analysis. *Environmental Science & Policy* 107, 23-35.
- Pahl-Wostl, C. 2020 Adaptive and sustainable water management: from improved conceptual foundations to transformative change, *International Journal of Water Resources Development*, 36:2-3, 397-415, DOI: 10.1080/07900627.2020.1721268
- Vinke-de Kruijf, J., Pahl-Wostl, C. and Knieper, C. 2020 Wider learning outcomes of European climate change adaptation projects: A Qualitative Comparative Analysis. *Environmental Innovation and Societal Transitions*, 34:270-297. doi:<https://doi.org/10.1016/j.eist.2018.09.004>
- Lebel, L., Haefner, A., Pahl-Wostl, C., & Baduri, A. 2020. Governance of the water-energy-food nexus: insights from four infrastructure projects in the Lower Mekong Basin. *Sustainability Science*. doi:10.1007/s11625-019-00779-5
- Landwehr, T., Kantoush, S. A., Pahl-Wostl, C., Sumi, T., & Irie, M. 2020. The effect of optimism bias and governmental action on siltation management within Japanese reservoirs surveyed via artificial neural network methodologies. *Big Earth Data*, 1-22. doi:10.1080/20964471.2020.1711632
- Halbe, J., & Pahl-Wostl, C. 2019. A Methodological Framework to Initiate and Design Transition Governance Processes. *Sustainability*, 11(3). doi:10.3390/su11030844
- Heitmann, F., Halbe, J., & Pahl-Wostl, C. 2019. Integrated and Participatory Design of Sustainable Development Strategies on Multiple Governance Levels. *Sustainability*, 11(21). doi:10.3390/su11215931
- Heitmann, F., Pahl-Wostl, C. and Engel, S. 2019. Requirements Based Design of Environmental System of Systems: Development and Application of a Nexus Design Framework. *Sustainability* 11 (12), 3464.
- van Bers, C., Delaney, A., Eakin, H., Cramer, L., Purdon, M., Oberlack, C., Evans, T., Pahl-Wostl, C., Eriksen, S., Jones, L., Korhonen-Kurki, K., Vasileiou, I. 2019. Advancing the research agenda on food

- systems governance and transformation. *Current Opinion in Environmental Sustainability*, 39, 94-102, doi:<https://doi.org/10.1016/j.cosust.2019.08.003>
- Lumosi, C. K., Pahl-Wostl, C. and Scholz, G. 2019. Can 'learning spaces' shape transboundary management processes? Evaluating emergent social learning processes in the Zambezi basin. *Environmental Science & Policy* 97, 67-77.
 - Ulbrich, R. and Pahl-Wostl, C. 2019. The German Permaculture Community from a Community of Practice Perspective. *Sustainability* 11 (5), 1241.
 - Pahl-Wostl, C. 2019. Governance of the water-energy-food security nexus: A multi-level coordination challenge. *Environmental Science and Policy*, 92, 356-367.
 - Pahl-Wostl, C. 2019. The role of governance modes and meta-governance in the transformation towards sustainable water governance. *Environmental Science & Policy* 91, 6-16.
 - Feindt, P. H., Krämer, C., Früh-Müller, A., Wolters, V., Pahl-Wostl, C., Heißenhuber, A., van Bers, C., Thomas, F. and Purnhagen, K. 2018. Der Status quo ist keine Option – Vorschlag für eine zukunftsfähige Architektur der Agrarpolitik. *Natur und Landschaft* 93 (6), 280-285.
 - Vinke-de Kruijf J, Pahl-Wostl C, Knieper C 2018. Wider learning outcomes of European climate change adaptation projects: A Qualitative Comparative Analysis. *Environmental Innovation and Societal Transitions*. doi:<https://doi.org/10.1016/j.eist.2018.09.004>
 - Liu, J., Hall, V., Godfray, H. C. J., Tilman, D., Gleick, P., Hoff, H., Pahl-Wostl, C., Xu, Z., Chung, M. G., Sun, J., and Li, S. 2018. Nexus approaches to global sustainable development. *Nature Sustainability*, 1: 466-476.
 - Stein C, Pahl-Wostl C, Barron J. 2018. Towards a relational understanding of the water-energy-food nexus: an analysis of embeddedness and governance in the Upper Blue Nile region of Ethiopia. *Environmental Science & Policy* 90:173-182.
 - Halbe J, Knüppe K, Knieper C, Pahl-Wostl C. 2018. Towards an integrated flood management approach to address trade-offs between ecosystem services: Insights from the Dutch and German Rhine, Hungarian Tisza, and Chinese Yangtze basins. *Journal of Hydrology* 559:984-994.
 - Halbe, J., Pahl-Wostl, C. and Adamowski, J. 2018. A methodological framework to support the initiation, design and institutionalization of participatory modeling processes in water resources management. *Journal of Hydrology*, 556. 701-716.
 - Suškevičs, M., Hahn, T., Rodela, R., Macura, B. and Pahl-Wostl, C. 2018. Learning for social-ecological change: a qualitative review of outcomes across empirical literature in natural resource management. *Journal of Environmental Planning and Management*, 61(7), 1085-1112.
 - Pahl-Wostl, C. 2017. An evolutionary perspective on water governance: From understanding to transformation. *Water Resources Management*, 30: 2917-2932.
 - Bellaubi, F. and Pahl-Wostl, C. 2017. Corruption risks, management practices, and performance in water service delivery in Kenya and Ghana: an agent-based model. *Ecology and Society* 22 (2).
 - Van der Voorn, T., Quist, J., Pahl-Wostl, C. and Haasnoot, M. 2017. Envisioning robust climate change adaptation futures for coastal regions: a comparative evaluation of cases in three continents. *Mitigation and Adaptation Strategies for Global Change* 22 (3): 519-546
 - Bhaduri, A., Bogardi, J., Siddiqi, A., Voigt, H., Vörösmarty, C., Pahl-Wostl, C., et al. 2016. Achieving Sustainable Development Goals from a Water Perspective. [Review]. *Frontiers in Environmental Science*, 4(64), doi:10.3389/fenvs.2016.00064.
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 - Knüppe, K., Pahl-Wostl, C. and Vinke de-Kruijf, J. 2016. Sustainable Groundwater Management: A comparative Study of Local Policy Changes and Ecosystem Services in South Africa and Germany. *Environmental, Policy and Governance*, 26: 59-72.

- Knieper, C., and Pahl-Wostl, C. 2016. A Comparative Analysis of Water Governance, Water Management, and Environmental Performance in River Basins. *Water Resources Management*, 30(7), 2161-2177
- van der Voorn, T., Quist, J., Pahl-Wostl, C. et al. 2015. Envisioning robust climate change adaptation futures for coastal regions: a comparative evaluation of cases in three continents. *Mitig Adapt Strateg Glob Change*. 1-28. doi:10.1007/s11027-015-9686-4
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- Halbe, J., Adamowski, J. and Pahl-Wostl, C. 2015. The Role of Paradigms in Engineering Practice and Education for Sustainable Development. *Journal of Cleaner Production*. 106: 272-282.
- Halbe, J., Pahl-Wostl, C., Lange, M. A., and Velonis, C. 2015. Governance of transitions towards sustainable development – the water–energy–food nexus in Cyprus. *Water International*, 1-18, doi:10.1080/02508060.2015.1070328.
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- Halbe, J., Adamowski, J., Bennett, E., Pahl-Wostl, C. and Farahbakhsh, K. 2014. Functional Organization Analysis for the Design of Sustainable Engineering Systems. *Ecological Engineering*, 73: 80-91.
- Scholz, G., Dewulf, A., and Pahl-Wostl, C. 2014. An analytical framework of social learning facilitated by participatory methods. *Systemic Practice and Action Research*, 27(6): 575-591.
- Pahl-Wostl, C., Becker, G., Sendzimir, J., and Knieper, C. 2013. How Multilevel Societal Learning Processes Facilitate Transformative Change: A Comparative Case Study Analysis on Flood Management. *Ecology and Society*, 18 (4): 58. [online] URL: <http://www.ecologyandsociety.org/vol18/iss4/art58>
- Lawford, R., Bogardi, J., Marx, S., Jain, S., Pahl-Wostl, C., Knüppe, K., Ringler, C., Lansigan, F., Meza, F. 2013. Basin Perspectives on the Water-Energy-Food Security Nexus. *Current Opinion in Environmental Sustainability*, 5: 607-616.
- Pahl-Wostl, C., Palmer, M. and Richards, K. 2013. Enhancing water security for the benefits of humans and nature - the role of governance. *Current Opinion in Environmental Sustainability*, 5: 676-684.
- Allen, C., Xia, J., and Pahl-Wostl, C. 2013. Climate Change and Water Security: Challenges for Adaptive Water Management. *Current Opinion in Environmental Sustainability*, 5: 625-632.
- Pahl-Wostl, C., Vörösmarty, C. J., Bhaduri, A., Bogardi, J., Alcamo, J. and Rockström, J. 2013. Towards a sustainable water future: Shaping the next decade of global water research. *Current Opinion in Environmental Sustainability*, 5: 708-714.
- Vörösmarty, C. J., Pahl-Wostl, C., Bunn S. and Lawford R. 2013. Global Water, the Anthropocene and the Transformation of a Science. *Current Opinion in Environmental Sustainability*, 5: 539-550.
- Gupta, J., Pahl-Wostl, C. and Zondervan, R. 2013. Global water governance - A multi-level challenge in the anthropocene. *Current Opinion in Environmental Sustainability*, 5: 273-280.
- Gupta, J. and Pahl-Wostl, C. 2013. Global Water Governance in the Context of Global and Multi-level Governance: Its Need, Form, and Challenges. *Ecology and Society* 18 (4): 53. [online] URL: <http://www.ecologyandsociety.org/vol18/iss4/art53/>
- Binder, C. R., J. Hinkel, P. W. G. Bots and C. Pahl-Wostl. 2013. Comparison of Frameworks for Analyzing Social-ecological Systems. *Ecology and Society* 18 (4): 26. [online] URL: <http://www.ecologyandsociety.org/vol18/iss4/art26/>

- Pahl-Wostl, C., Arthington, A., Janos Bogardi, Stuart E Bunn, Holger Hoff, Louis Lebel, Elena Nikitina, Margaret Palmer, LeRoy N Poff, Keith Richards, Maja Schlüter, Roland Schulze, Andre St-Hilaire, Rebecca Tharme, Klement Tockner, Daniel Tsegai, 2013. Environmental flows and water governance: managing sustainable water uses, *Current Opinion in Environmental Sustainability*, 5(3-4), 341-351.
- Baumgartner, T. and Pahl-Wostl, C., 2013. UN-Water and its role in global water governance. *Ecology and Society* 18 (3): 3. [online] URL: <http://www.ecologyandsociety.org/vol18/iss3/art3/>
- Pahl-Wostl, C., Conca, K., Kramer, A., Maestu, J., and Schmidt, F. 2013. Missing links in global water governance: A processes-oriented analysis. *Ecology and Society*, 18(2), 33.
- Halbe, J., Pahl-Wostl, C., Sendzimir, J. and Adamowski, J. 2013. Towards Adaptive and Integrated Management Paradigms to Meet the Challenges of Water Governance. *Water, Science and Technology*, 67(11), 2651-2660.
- Pahl-Wostl, C., Giupponi, C., Richards, K., Binder, C., de Sherbinin, A., Sprinz, D., Toonen, T., and van Bers, C., 2013. Building the foundations for dealing with the challenges arising from global change Requirements for methodologies, methods, data and knowledge. *Environmental Science and Policy*, 28: 36-47.
- Lebel, L., E. Nikitina, C. Pahl-Wostl and C. Knieper. 2013. Institutional Fit and River Basin Governance: a New Approach Using Multiple Composite Measures. *Ecology and Society* 18 (1): 1. [online] URL: <http://www.ecologyandsociety.org/vol18/iss1/art1/>
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- Xia, C. and Pahl-Wostl, C. 2012. The development of water allocation management in the Yellow River Basin. *Water Resources Management*. 26(12): 3395–3414. doi: 10.1007/s11269-012-0078-1.
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- Van der Voorn, T., Pahl-Wostl, C. and Quist, J. 2012. Combining backcasting and adaptive management for climate adaptation in coastal regions. A methodology and a South African case study. *Futures*, 44:346-364.
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TEACHING

Courses for the bachelor and master programs in system science partly offered in cooperation with programs in the social sciences and/or geography:

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- President of TIAS, The Integrated Assessment Society

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