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## **Curriculum Vitae**

### **Werner Lang**

Prof. Dr.-Ing. Dipl.-Ing.  
M. Arch. II (UCLA) – Architect BYAK

Technical University of Munich  
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## **Werner Lang**

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### **Education:**

University of California – Los Angeles, Master of Architecture – M. Arch. II (UCLA), 1990.

Technical University of Munich, Diploma, 1988.

Architectural Association London, 1985 – 1986, Extension Studies

Peter-Dörfler-Gymnasium Marktoberdorf, A-Levels (Abitur), June 1980.

### **Awards:**

Two Best Paper Awards at WSBE24 Conference:  
<https://doi.org/10.1088/1755-1315/1363/1/012071>  
<https://doi.org/10.1088/1755-1315/1363/1/012096>

TUM Sustainability Award 2022, Technical University of Munich

Poster Award for the conference contribution "Correlative Impact of Shading Strategies on Sky Exposure and Cooling Performance at Pedestrian-Level in Street Canyon"  
35th PLEA Conference on Passive and Low Energy Architecture, A Coruña, 1–3 Sept. 2020.

"Doce et Delecta" awarded by the Student Council BGU for the best teaching (Second Prize) in the category "Lecture" for the Bachelor of Civil and Environmental Engineering, SS 2018 - WS 2018/2019, "Fundamentals of Sustainable Construction", TUM, 05 July 2019.

Bavarian Energy Award 2014 for the flagship project "Energy Efficiency Center" of the Center for Applied Energy Research Bavaria, Würzburg, in the category "Plant Process Engineering and Product Development," Oct. 2014.

Engineering Award of the German Steel Construction 2013 - Category Bridge Construction for the new construction of the Danube Bridge Günzburg B 16. SSF Engineers AG Munich, in collaboration with Lang Hugger Rampp GmbH Architects, Munich, Jan. 2013.

International Building Skin-Tech Award 2008 (1st prize) for "School Systems for Hot Climates" in collaboration with Prof. Dr. Thomas Herzog, Munich, Dr.-Ing. Kurt Stepan, Munich, and the Center for Applied Energy Research (ZAE Bayern e.V.), Munich, Nov. 2008.

Doctoral Award of the Association of Friends of the Technical University of Munich, 2000.

Bavarian Energy Award 2000 from the Bavarian State Ministry of Economic Affairs, Transport, and Technology. Recognition.

Creative Wood Award 2000. Recognition in the Category Wood Construction.

Award for the Best Master Thesis M. Arch. II 1990 from the University of California – Los Angeles (UCLA).

Fulbright Scholarship 1988 - 1990.

Hans Döllgast Award from the Technical University of Munich, 1988.

### **Professional Associations:**

Bavarian Chamber of Architects, member since Oct. 1993.

### **Professional Experience:**

Vice President for Sustainable Transformation, Technical University of Munich, since March 2023.

Full Professor for Energy-Efficient and Sustainable Design and Construction (ENPB), Technical University of Munich, since Sept. 2010.

Director of the Center for Sustainable Building, Technical University of Munich, Sept. 2010 - 2017.

Director of the Oskar von Miller Forum, Munich, since June 2010.

Professor for Sustainable Design at the University of Texas at Austin, School of Architecture, Jan. 2008 - July 2010.

Director of the Center for Sustainable Development at the University of Texas at Austin, School of Architecture, Sept. 2009 - July 2010.

Partner and Shareholder at the architectural firm Lang Hugger Rampp Architects GmbH, Munich, since 2006.

Principal of the Architectural Office Werner Lang, Munich, 2001 - 2007.

Lecturer for "Special Topics in Facade Construction," Technical University of Munich, Faculty of Architecture, 2001 - 2007.

Lecturer for "Building Materials Science," Technical University of Munich, Faculty of Architecture, 2000 - 2001.

Scientific Assistant at the Chair of Building Technology, Prof. Dr. (Univ. Rom) Thomas Herzog, Technical University of Munich, Faculty of Architecture, March 1995 - Feb. 2001.

Scientific Employee at the Chair of Building Technology, Prof. Dr. (Univ. Rom) Thomas Herzog, Technical University of Munich, Faculty of Architecture, April 1994 - Feb. 1995.

### **Work History with Architectural Firms:**

Prof. Dr. h.c. Kurt Ackermann and Partners, Munich, Oct. 1990 - March 1994.

Skidmore Owings & Merrill, Los Angeles, Jan. - June 1990.

Urban Innovations Group – Charles Moore, Los Angeles, Jan. - March 1989.

Von Werz Ottow Bachmann Marx, Munich, Nov. 1986 - Jan. 1987.

Richard Rogers & Partner, London, Sept. - Oct. 1986.

Office for Metropolitan Architecture O.M.A., London, Nov. 1985.

Von Seidlein, Munich, March - April 1985.

### **Academic Focus:**

Research and teaching in the fields of:

- Energy-efficient and sustainable design and building
- Building with a positive ecological footprint
- Life Cycle Assessment (LCA, LCC, SLCA)
- Integration of green, blue and grey infrastructure in urban environments

### **Guest Lecturer:**

Certificate Program Ecological Building on “Urban Design in the Context of Climate Change”, Oct. 2022 and Oct. 2024.

Content development of the Certificate Program Ecological Building, TUM Institute for LifeLong Learning, Fall 2022

TUM Certificate Sustainable Real Estate, TUM Institute for LifeLong Learning. Lecture Series on “Pathways to fundamental Sustainability in the Built Environment, together with Dr. Michael Keltsch, Summer 2022

Summer Academy Sarntal (South Tyrol). Joint event of the Friedrich-Alexander University Erlangen-Nuremberg, the University of Stuttgart, and the TUM with the course topic: "The Sustainable City in 2050," 22 Sept. – 04 Oct. 2019.

TUM Summer School Tunisia: "Energy-efficient and sustainable building design. A new cultural center for Djerba Island," Tunis, Tunisia. Technical University of Munich with the École Supérieure

d'Architecture d'Audiovisuel et de Design (ESAD) and the École Nationale d'Architecture et d'Urbanisme (ENAU), 03.-14. July 2017.

Dr. Serikbayev East Kazakhstan State Technical University (EKSTU) Ust-Kamenogorsk, Kazakhstan. Three-day workshop: "Energy Efficiency in the Building Sector and in Urban Environments," 12. - 14. Sept. 2011.

Huazhong University of Science and Technology (HUST) Wuhan, VR China, School of Architecture and Urban Planning: One-week lecture series and design workshop with the "Eco-Design Group" of HUST, June 2004.

### **Calls to Professorships:**

Call to the Technical University of Munich, Feb. 2010, accepted.

Call to the RWTH Aachen, July 2009, declined.

Call to the University of Texas at Austin, July 2007, accepted.

### **Scientific Commissions:**

Member of the selection committee for the Humboldt Research Fellowship Program of the Alexander von Humboldt Foundation. Since Aug. 2024.

Member of the Board of Trustees of the Center for Applied Energy Research, Würzburg. Since Dec. 2023.

Member of the Scientific Committee of the Sustainability Award of the Nobel Sustainability Trust, since June 2023.

Member of the Scientific Advisory Board of the Research Project "Heat Service for Municipalities". Institute for Sociology, Ludwig Maximilian University of Munich, funded by the Federal Ministry of Health, Berlin, since July 2021.

Member of the Scientific Advisory Board for the Conference "PLEA 2020: Planning Post Carbon Cities", A Coruña, Spain, 1. - 3. Sept. 2020.

Member of the Steering Committee of the BayWiss Joint College "Infrastructure Building and Urbanization". Since May 2019.

Member of the Scientific Advisory Board of the International Conference "SBE19" Cardiff, UK, 24. - 25. Sept. 2019.

Member of the Scientific Advisory Board of the International Conference "SBE19" Graz, 11. - 14. Sept. 2019.

Member of the Scientific Advisory Board for the Conference "PLEA 2018: Smart and Healthy within the 2-Degree Limit". Hong Kong, 10. – 12. Dec. 2018.

Member of the Scientific Advisory Board for "mobil.TUM 2018" "Urban Mobility – Shaping the Future Together". Munich, 13. - 14. June 2018.

Member of the Scientific Advisory Board of the Conference "VIII. International Conference on Textile Composites and Inflatable Structure – Structural Membranes 2017". Technical University of Munich, 9. - 11. Oct. 2017.

Member of the Scientific Advisory Board of the International Conference "PLEA 2017 – Passive Low Energy Architecture Design to Thrive" Edinburgh, Scotland, 3. – 5. July 2017.

Member of the Scientific Advisory Board of the Conference "iSEnEC – Integration of Sustainable Energy Conference 2016". Nuremberg, 11. – 12. July 2016.

Member of the Scientific Advisory Board of the "International Scientific Conference on Mobility and Transport. Transforming Urban Mobility". Technical University of Munich, mobil.TUM 2016. Oskar von Miller Forum, Munich, 6. – 7. June 2016.

Member of the Scientific Advisory Board of the International Conference "SBE16 Hamburg: Strategies – Stakeholders – Success Factors". Hamburg, 8. - 11. March 2016.

Member of the Scientific Advisory Board of the International Conference "ECBCC 2015 - Nature-Based Solutions to Climate Change in Urban Areas and Their Rural Surroundings". Bonn, 18. – 19. Nov. 2015.

Member of the Scientific Advisory Board of the International Conference "PLEA 2015 – Architecture in (R)evolution". Bologna, Italy, 9. -12. Sept. 2015.

Member of the Scientific Advisory Board of the International Conference "PLEA 2014 – Sustainable Habitat for Developing Societies". Ahmedabad, India, 16. - 18. Dec. 2014.

Member of the Scientific Advisory Board of the Center for Applied Energy Research (ZAE) Bavaria. 2014 – 2018.

Member of the Scientific Advisory Board of the "International Scientific Conference on Mobility and Transport: Sustainable Mobility in Metropolitan Regions". Technical University of Munich, mobil.TUM 2014. Oskar von Miller Forum, Munich, 19. - 20. May 2014.

Member of the Working Group "Energy-Efficient Construction of the Upper Building Authority in the Bavarian State Ministry of the Interior for Building and Transport".

Member of the Scientific Advisory Board of the International Conference "Textile Composites and Inflatable Structures. Structural Membranes 2013". Technical University of Munich, 9. - 11. Oct. 2013.

Member of the TUM Appointment and Tenure Board.  
Technical University of Munich, 01. Jan. 2013 – 31. Dec. 2015.

Member of the Scientific Advisory Board of the International Conference "sb 13 Graz - International Conference on Sustainable Buildings - Construction Products and Technologies".  
Graz, Austria, 25. - 28. Sept. 2013.

Member of the Scientific Advisory Board and Organizing Committee of the International Conference "PLEA 2013 – Sustainable Architecture for a Renewable Future". Munich, 10. - 12. Sept. 2013.

Member of the Scientific Advisory Board of the International Conference "sb 13 Munich – Implementing Sustainability – Barriers and Chances". 23. - 26. April 2013.

Member of the Bavarian Academy of Rural Space e.V.. Since April 2013.

Member of the German Academy for Urban Development and Regional Planning.  
Since April 2013.

Member of the Scientific Advisory Board at the Federal Institute for Building, Urban Affairs, and Spatial Development (BBSR). March 2013 - Feb. 2017.

Member of the Scientific Advisory Board for the Research Project "Aktifas - Facade-Integrated Solar Thermal: Inventory and Development of Future-Oriented Concepts". Jan. 2013 – Dec. 2014.

Member of the Scientific Advisory Board of the International Doctoral Network and Doctoral Program "dokwerk. Building and Real Estate in the Life Cycle". Jan. 2013 – Dec. 2014.

Member of the Permanent Conference of University Professors in Building Physics and Technical Extension. Since Nov. 2012.

Member of the Expert Group of the Research Initiative Future Building of the Federal Institute for Building, Urban Affairs, and Spatial Development (BBSR) in the Federal Office for Building and Regional Planning (BBR). Feb. 2013 – Sept. 2014.

Member of the Management Committee of the COST Action of the European Commission TU1104 "Smart Energy Regions". Dec. 2011 – Feb. 2016.

Member of the Scientific Advisory Board "WECOBIS".  
Federal Institute for Research on Building, Urban Affairs and Spatial Development within the Federal Office for Building and Regional Planning, Berlin. Sept. 2011 - 2020.

Member of the Scientific Committee of the "International Scientific Conference on Mobility and Transport: Making Sustainable Mobilities - Interdisciplinary Perspectives". Technical University of Munich, mobil.TUM 2011. Oskar von Miller Forum, Munich, 7. - 8. April 2011.

Member of the Management Committee of the COST Action of the European Commission COST C23 "Strategies for a Low Carbon Built Environment". 2005 - 2009.

Chairman of the International Scientific Committee of the Conference and Special Exhibition "Intelligent Building Middle East 2005" in Manama, Bahrain. 2005.

Deputy of Prof. Dr. Thomas Herzog for the Scientific Committee of the "World Commission Urban 21". 1998 - 2000.

## **Supervisor of Doctoral Theses:**

### **Ongoing**

Simone Magdolen: *Synergies of sports facilities with the surrounding neighborhood*. 2nd supervisor: Prof. Dr.-Ing. Natalie Eßig, Munich University of Applied Sciences. Since May 2018.

Sebastian Botzler: *Empowering the Incorporation of Wider Benefits of Energy Efficiency Measures in Local and Regional Decision-Making Processes*. Since Nov. 2017.

Jakob Hahn: *User-focused operational optimization of buildings and building technical systems*. 2nd supervisor: Prof. Werner Jensch, HS München. Since Jan. 2017.



Rosina Rieder: *A methodology for the criticality assessment of raw materials for resource-efficient buildings and building technologies*. Doctoral thesis in the framework of the cooperative postgraduate programme 'Resource Efficiency in Processes and Buildings' of the TU Munich and the Hochschule Rosenheim. 2nd supervisor: Prof. Dr.-Ing. Sandra Kommes, HS Rosenheim. Since Nov. 2015.  
Lucas Lauss: *Optimization of building performance and minimization of performance gaps through robust buildings*. 1st<sup>t</sup> supervisor: Prof. Thomas Auer, Since July 2018.

Farzan Banihashemi: *Modeling Occupant Behavior in Non-Residential Buildings with Machine Learning and Deep Learning* Since May 2020

Maximilian Guenzel: *Opportunities and limits of using smart technologies in relation to user behavior and user influence with regard to energy efficiency, well-being, and performance in educational buildings*. 2nd supervisor: Prof. Werner Jensch, Munich University of Applied Sciences. Since May 2022.

Franziska Pichlmeier: *Development of an instrument for assessing the environmental quality of modernization with respect to technical building equipment*. 2nd supervisor: Prof. Dr. Werner Jensch, Hochschule München, Since October 2020

Iryna Takser: *The impact of circular construction on life cycle costs and climate-related costs of building constructions*. Since Jan. 2024.

Kathrin Theilig: *Investigation and application of methods of multi-criteria decision analysis for sustainability assessment of building constructions*. 2nd supervisor: Prof. Dr.-Ing. Jutta Albus, HS Bochum. Since July 2022.

Doris Bechtel: *Planning competitions with a focus on climate-friendly construction*. Since July 2023

Simon Möller: *Involvement in residential construction from a sociological perspective*. Since January 2020

Leander Präger: *With the territorial and portfolio greenhouse gas balance towards a material transition in the construction industry*. Since May 2024

Patrick Zimmermann: *Sufficiency in the Building Sector - Practices, Barriers and -Potentials*. Since June 2021.

Chujun Zong: *A decision-making framework with dynamic life cycle assessment (DLCA) considering uncertainties and temporal variations for building design*. Since Jan. 2023.

Fatma Deghim: *A data-driven methodology for modeling indoor-outdoor interactions to improve urban sustainability assessment*. Since Sept. 2024

Jonathan Woytowicz: *Coupling of top-down and bottom-up analysis for the development and implementation of greenhouse gas limit values for buildings*. Since June 2024

## **Completed**

Roland Reitberger: *Multi-criteria optimized decision support in neighborhood development*. 2nd supervisor: Prof. Dr. rer. nat. Herbert Palm, Hochschule München, Completed with „summa cum laude“.. 2021 - 2024.

Christina Meier-Dotzler: *Development of ecological indicators for building constructions in old and new buildings based on 3D city models*. 2nd supervisor: Prof. Dr.-Ing. Frank Petzold, TUM. Completed. 2010 – 2023.

Michael Vollmer: *Method for determining and optimizing the ecological space requirements of buildings based on life cycle assessments (LCA) and thermal building simulations*. 2nd supervisor: Prof. Dr.-Ing. Ferdinand Ludwig, TUM. Completed. 2017 – 2023.

Jutta Katthage: *Sustainability of existing outdoor sports facilities: Social benefits of standardized and competition-oriented outdoor sports facilities*. 2nd supervisor: Prof. Dr.-Ing. Natalie Eßig, Hochschule München. Completed. 2020 – 2022.

Priya Pawar: *Feasibility Study of Innovative Passive Design Strategies and Technologies for Ultra-Low Zero and Positive Energy Buildings of the Tropics*. 2nd supervisor: Prof. Dr.-Ing. Klaus Sedlbauer, TUM. Completed. 2016 - 2022.

Patricia Schneider: *Life cycle assessments as a tool in the building planning process: Standardization, weighting, and communication of results of the ecological life cycle analysis*. 2nd supervisor: Prof. Dr.-Ing. Konrad Nübel, TUM. Completed with „summa cum laude“. 2016 - 2022.

Hannes Harter: *Life cycle analysis of technical building equipment for large residential building stocks based on semantic 3D city models*. 2nd supervisor: Prof. Dr. rer. nat. Thomas Kolbe, TUM. Completed with "summa cum laude". 2017 - 2021.

Christian Göpfert: *The emergence and effects of holistic municipal climate change policy: The transformation from isolated approaches to integrative institutionalization of climate protection and climate adaptation in German independent cities*. 2nd supervisor: Prof. Dr. Christine Wamsler. Lund University, Sweden. Completed with "summa cum laude". 2016 - 2021.

Daniel Kierdorf: *Potentials of the interaction between building technology and energy storage systems*. 2nd supervisor: Prof. Thomas Auer, TUM. Completed. 2014 – 2019.

Michael Keltsch: *Better / Different / Less / Together. Implementation strategies for nearly zero-energy standards in high-tech special buildings using the laboratory building typology as an example*. 2nd supervisor: Prof. Thomas Auer, TUM. Completed with "summa cum laude". 2015 – 2019.

Mahmoud Islam Gadelhak: *Integrated Environmental Performance Assessment. A Computational Framework for Optimizing Conceptual Design Facades performance*. 2nd supervisor: Prof. Dr.-Ing. Frank Petzold, TUM. Completed. 2014 – 2019.

Julia Brasche: *Synergy effects of climate protection and climate adaptation measures: Integrated urban planning strategies*. 2nd supervisor: Dr.-Ing. Sabine Säck-da Silva. Completed. 2014 – 2019.

Matthias Heinrich: *Development of an integral raw material model for urban systems: A contribution to supporting material flow analysis and resource management*. 2nd supervisor: Prof. Dr.-Ing. Natalie Essig, Hochschule München. Completed. 2013 – 2019.

Johannes Maderspacher: *Method for modeling robust renovation concepts for existing buildings under the influence of climate change*. 2nd supervisor: Prof. Thomas Auer, TUM. Completed with "summa cum laude". 2013 – 2017.

Markus Weissenberger: *Life cycle analysis and cumulative energy consumption of nearly zero-energy buildings*. 2nd supervisor: Prof. Werner Jensch, HS München. Completed. 2013 – 2016.

Susanne Bodach: *Climate responsive Building Design Strategies of vernacular architecture in Nepal*. 2nd supervisor: Prof. Thomas Auer, TUM. Completed. 2012 – 2016.

Wael Ahmed Yousuf Mousa: *An evolutionary approach to the role of heritage-inspired solutions in hot and arid climate. The case of Egypt*. 2nd supervisor: Prof. Thomas Auer, TUM. Completed. 2012 – 2016.

René Regel: *Differentiable energy indicators for energy planning, renovation, and operational optimization of buildings*. 2nd supervisor: Prof. Werner Jensch, HS München. Completed. 2012 – 2016.

Yunming Shao: *A systematic approach to energy efficiency retrofit solutions for existing buildings*. 2nd supervisor: Prof. Philipp Geyer, KU Leuven; Belgium. Completed. 2012 – 2015.

John E. Anderson: *Life-cycle assessment of induced impact in the built environment*. 2nd supervisor: Prof. Dr.-Ing. Gebhard Wulfhorst, TUM. Completed with "summa cum laude". 2011 – 2014.

## Second/third Supervisor:

Ata Zahedi: *Machine-Interpretable BIM-based Communication and Design Decisions Documentation*. 1st supervisor: Prof. Dr. Frank Petzold. Completed 2024.

Simon Greif: *Spatially high-resolution analysis of the technical potential of heat pumps for decentralized heating of residential buildings in Germany*. 1st supervisor: Prof. Ulrich Wagner, TU Munich. Completed 2023.

Karl-Martin Heißler: *Low-temperature networks in neighborhoods*. 1st supervisor: Prof. Thomas Auer. Completed 2021.

Stopper, Jochen: *FLUIDGLAS – Liquid-flow-through facade elements. Applicability of liquid-flow-through transparent facade elements for controlling energy transmission in building envelopes*. 1st supervisor: Prof. Gerhard Hausladen, TU Munich. Completed 2018.

Zölch, Teresa: *The potential of ecosystem-based adaptation: Integration into urban planning and effectiveness for heat and flood mitigation*. 1st supervisor: Prof. Dr. Stephan Pauleit, TUM, School of Life Sciences Weihenstephan. 2nd supervisor: Prof. Christine Wamsler, Lund University, Sweden. Completed with "summa cum laude", Dec. 2017.

Fehlhaber, Daniel: *Assessment of costs and risks in renovation projects*. 1st supervisor: Prof. Dr.-Ing. Frank Petzold, TU Munich. Completed 2017.

Kandler, Christian: *Modeling time usage, mobility, and energy profiles to determine the potential of energy management systems in households*. 1st supervisor: Prof. Ulrich Wagner, TU Munich. Completed with "cum laude", Aug. 2017.

LU, Yao: *Guidelines for Façade Refurbishment of 1980s Multi-storey Masonry Residential Buildings in the Cold Region of China: Addressing Energy Efficiency and Environmental Quality*. 1st supervisor: Prof. Thomas Auer, TU Munich. Completed, Aug. 2017.

Lindauer, Manuel: *Dynamic sensitivity analysis methods for energy simulation of residential building neighborhoods*. 1st supervisor: Prof. Klaus Sedlbauer, TU Munich. Completed with "summa cum laude", March 2017.

Wang, Yang: *Optimization for Building Control Systems of a School Building in Passive House Standard*. 1st supervisor: Prof. Dr.-Ing. Hartmut Spliethoff, TU Munich. Completed, Sept. 2015.

Klimke, Klaus: *Energy impact of industrial gates in heated hall buildings and measures to reduce heat losses caused by opening*. 1st supervisor: Prof. Dr.-Ing. Gerhard Hausladen, TU Munich. Completed, May 2015.

Kaden, Robert: *Calculation of energy demands of residential buildings and modeling energy-related indicators based on semantic 3D city models*. 1st supervisor: Prof. Dr. Thomas H. Kolbe, TU Munich. 2nd supervisor: Prof. Dr.-Ing. habil. Monika Sester, University of Hanover, Institute of Cartography and Geoinformatics. Completed, Aug. 2014.

Rössl, Timm: *Concepts for reducing the energy demand of production facilities at international locations*. 1st supervisor: Prof. Dr.-Ing. Gerhard Hausladen, TU Munich. Completed, Dec. 2013.

Liedl, Petra: *Interaction between climate, humans, and buildings. Planning tools for the conceptual phase of office buildings in different climate regions, focusing on energy and indoor climate based on a detailed climate analysis*. 1st supervisor: Prof. Dr.-Ing. Gerhard Hausladen, TU Munich. Completed with "summa cum laude", May 2011.

### **Chairman of doctoral examination committees:**

Schlachter, Maximilian. Nov. 29, 2019. 1st supervisor: Prof. Josef Zimmermann, TU Munich, BGU  
Ziegler, Matthias Christian. June 6, 2019. 1st supervisor: Prof. Klaus Sedlbauer, TU Munich, BGU  
Lukas Karl Schwan, May 9, 2019. 1st supervisor: Prof. Thomas Auer, TU Munich, AR  
Krastel, Victoria. Apr. 2, 2019. 1st supervisor: Prof. Klaus Sedlbauer, TU Munich, BGU  
Trautwein, Iris. June 7, 2018. 1st supervisor: Prof. Josef Zimmermann, TU Munich, BGU  
Geywitz, Viktoria. Dec. 7, 2017. 1st supervisor: Prof. Josef Zimmermann, TU Munich, BGU  
Fehlhaber, Daniel. Oct. 25, 2017. 1st supervisor: Prof. Frank Petzold, TU Munich, AR  
Altmann, Isabella. March 20, 2017. 1st supervisor: Prof. Josef Zimmermann, TU Munich, BGU  
Förster, Agnes. July 17, 2016. 1st supervisor: Prof. Alain Thierstein, TU Munich, AR  
Winkler, Manuel. Jan. 27, 2016. 1st supervisor: Prof. Klaus Sedlbauer, TU Munich, BGU  
Bauernfeind, Melanie. April 30, 2014. 1st supervisor: Prof. Andreas Burmester, TU Munich, AR  
Heusler, Ingo. Dec. 2, 2011. 1st supervisor: Prof. Gerd Hauser, TU Munich, BGU

### **Reviewer for international journals:**

since 2021 Energy Reports, Elsevier  
since 2021 Journal of Environmental Management, Elsevier  
since 2020 Resources, Conservation & Recycling, Elsevier  
since 2019 Sustainable Cities and Society, Elsevier

### **Expert Committees:**

Expert Juror for the architectural competition for Stockdorf "New Life along the River Würm". July 2023.

Expert Juror for the urban planning competition for the expansion of the Ludwigsfeld settlement, Munich. March 2023.

Expert Juror for the urban and landscape planning competition "Residential Development Moosach" of the City of Munich, Oct. 2021.

Chairman of the Jury for "Fassa Bortolo Italian Prize for Sustainable Architecture" XIV Edition 2020. Università degli Studi di Ferrara, Dipartimento Architettura Ferrara, July – Oct. 2020.

Chairman of the Jury for the Hans Sauer Award "Designing Circularity in the Built Environment". A German-Dutch competition, February 2020.

Peer-Reviewer (DFG) for the evaluation of the SFB/Transregio application TRR 280 "Construction Strategies for Material-Minimized Carbon Concrete Structures – Foundations for a New Way of Building". 21./22.1.2020, Dresden.

Peer-Reviewer (DFG) for the evaluation of the individual application "Spatial Clustering and Optimization of Building Topology of Production Sites and Factories" TR 800/13-1, Nov. 2019.

Reviewer (DAAD) for short-term lectureship at Tongji University Shanghai, Department of Development Cooperation Programs - ST 42, Nov. 2019.

Member of the Jury for the Innovation Award of the Bavarian Construction Industry Association, since July 2018.

Reviewer under the Humboldt and Bessel Research Award Program of the Alexander von Humboldt Foundation for the "Bessel Research Award" for Prof. Dr.-Ing. Christoph Reinhart, MIT, USA, December 2017.

External Reviewer in the evaluation process of the NSERC Discovery Grant proposal of the Natural Sciences and Engineering Research Council of Canada for Prof. Mohamad Araji, Dec. 2017.

External Reviewer of the PhD examination of Torhildur Kristjansdottir on the topic "Life cycle greenhouse gas emission analysis of single-family Norwegian Zero Emission pilot Buildings and concepts". Norwegian University of Science and Technology Trondheim, Norway, 11. Dec. 2017.

Reviewer for the ideas competition "EnEff.Gebäude.2050" of the Federal Ministry for Economic Affairs and Energy (BMWi), November 2017.

Reviewer in the context of a research assessment 2010-2015 of the Department of the Built Environment at Eindhoven University of Technology, 2. – 4. Nov. 2016.

Reviewer in the context of a review process for the CREATE project "Singapore-Berkeley Building Efficiency and Sustainability in the Tropics (SinBerBEST) program" on invitation of UC Berkeley in Singapore, 7. – 10. Aug. 2016.

External Reviewer of the PhD examination of Torsten Masseck on the topic: "Teaching Sustainability: Living Labs in Architecture. A framework proposal for Living Lab ecosystems for teaching research and innovation in the field of sustainable architecture and ESD in higher education. Specific case study: Living Lab LOW3". Universitat Politècnica de Catalunya Barcelona, Spain, 5. Feb. 2016.

External Reviewer in the appointment process for the professorship "Industrial Construction and Manufacturing Technologies" at the University of Applied Sciences Augsburg, Oct. 2015.

Jury Member "International Prize for Sustainable Architecture".  
Università Degli Studi Di Ferrara, Dipartimento di Architettura, Bologna, Italy, 17. June 2014.

Expert Juror for Finland's Strategic Center for Science Technology and Innovation (SHOK) on research projects of Tekes Finnish Funding Agency for Innovation. Helsinki, Finland, 26. - 27. May 2014.

External Reviewer of the PhD examination of Sven Schmedes on the topic "Sustainable Sports Buildings". Cardiff University, Wales, 27. Jan. 2014.

External Reviewer of the master's thesis by Timo Burmeister: "Livable City. Urban Communities and Public Space". First reviewer: Prof. Christian Schwabe, LMU Munich, Geschwister-Scholl-Institute for Political Science, 22. Nov. 2013.

Expert Juror for the Competition 'Historic Town Centers - Integrated Thinking and Action.' Announced by the Federal Ministry of Transport, Building, and Urban Development, April 22, 2013.

Expert Juror for the Urban and Landscape Planning Competition Paulaner Brewery Munich. Nov. 2012 - June 2013.

Expert Juror for the Realization Competition "World of Living – Herzogenaurach". Nov. 2011 - Jan. 2012.

Expert Juror for the Architectural Competition for the New Construction of a Daycare Center at Haidgraben in Ottobrunn, Nov. 2011.

Expert Juror for the Urban Ideas and Realization Competition Former Quelle Area in Nuremberg, Nov. 2011.

Expert Juror for the Architectural Competition "GästePlusHaus" a low-energy guest house in Murnau, Bavaria. July 2011.

Expert Juror for the German Architecture Prize 2011. Federal Ministry of Transport, Building, and Urban Development (BMVBS) and Federal Chamber of Architects (BAK). June 2011.

Expert Juror and Chair of the Jury for the competition "Architecture with Energy 2011". Federal Ministry of Economics and Technology, May 2011.

Expert Juror for the Student Competition "Solar Buildings". European Commission DG XII, TU Stuttgart, Chair Prof. von Seidlein, Dec. 1996.

### **Conference Chair and related Functions:**

COVID-19 Urban Thinkers Campus #2: Accelerating Affordable and Sustainable Housing in Informal Settlements. Webinar in collaboration with TU Vienna and Politecnico di Milano.  
Supported by the United Nations Human Settlements Program Nairobi, Kenya, 28. July 2020.  
Session Chair as part of the Quality of Life Conference TU Berlin - Campus El Gouna, Egypt, 24. - 26. Nov. 2017.

Concept Development and Organizer of the 1st Alpine Construction Conference, Garmisch-Partenkirchen, 16. - 17. March 2016, on behalf of the Federal Ministry for the Environment, Nature Conservation, Building, and Nuclear Safety, Berlin.

15th Munich Science Days "Cities of the Future"  
Moderation of a lecture session, Old Congress Hall, Munich, 15. Nov. 2015.

"COST ACTION TU1104 – Smart Energy Regions"  
Workshop and Management Committee Meeting. Oskar von Miller Forum, Munich, 5. – 6. Nov. 2015.

Co-Organization of Symposium and Exhibition "City Laboratory Nuremberg Weststadt - Livable Neighborhoods: Strategies for a Future-Oriented Urban Redevelopment"  
Nuremberg, 19. Nov. 2012.

Moderator of the event "Energy Efficiency" of the "2nd Colloquium of the Munich School of Engineering - Energy Challenges – Germany 2050". Technical University of Munich, 28. June 2012.

Co-Organization of Symposium "Energy Transition - What Can Buildings and Cities Contribute?".  
Center for Energy-Efficient and Sustainable Building (ZNB) at the Technical University of Munich.  
Oskar von Miller Forum, Munich, Nov. 2011.

Moderator of the event "Energy Efficiency" of the "1st Colloquium of the Munich School of Engineering - Sustainable Energy Supply of the Future". Technical University of Munich, 18. July 2011.

Moderator of the Panel Discussion "Buildings of the Future - Climate-Efficient and Innovative" on the occasion of the Federal Symposium "Competence Center Germany. Mobility, Buildings, Communication – Networked Innovations for New Growth". Organized by the Economic Council of Germany, Berlin, 18. March 2011.

Moderator for the panel discussion "Light, Air, and Sun – Have We Gone Too Far?" at the symposium "ClimaDesign meets Visions of Glass", Bau 2007, Munich, 18. Jan. 2007.

### **Involvement in Self-Administration:**

Member of the School Council of the TUM School of Engineering and Design, Jul. 2021 - Sept. 2024  
Chairman of the TUM Sustainability Board, since April 2023.

Member of the TUM Task Force Sustainable Campus Development, since April 2023.

Member of the "Cluster Sustainable Real Estate" of TUM, since July 2020.

Member of the Faculty Council of the Faculty of Civil, Geo and Environmental Engineering, Oct. 2019 – June 2021.

Member of the Study Quality Commission (SQK) for the Focus Area Construction of the Department of Civil- and Environmental Engineering, Oct. 2018 – Sept. 2022.

Chairman of the Examination Board for the Resource Efficient and Sustainable Construction program, Department of Civil- and Environmental Engineering & Architecture, TUM. Since Oct. 2011.

Member of the Study Award Commission of the Department of Civil- and Environmental Engineering, since May 2016.

Member of the Board of Trustees of the Ortner Foundation, Department of Civil- and Environmental Engineering, since Nov. 2014.

Member of the Board of Trustees of the Heinz Peter Scholz Foundation, Department of Civil- and Environmental Engineering, since May 2012.

Member of the Conference of Professors of Building Physics and Technical Finishing, since Sep. 2015

Chairman of the Examination Board for the Master's program in Resource-Efficient and Sustainable Construction (RNB), since Sep. 2011

### **Appointment and Evaluation Committees:**

TU Munich, tenure evaluation of the Tenure Track Assistant Professorship Land Surface – Atmosphere Interactions, Prof. Dr. Anja Rammig. Chairman of the appointment committee. Aug. - Dec. 2020.

TU Munich, tenure evaluation of the Tenure Track Assistant Professorship in Science and Technology Policy, Prof. Dr. Ruth Müller. Chairman of the appointment committee. Aug. – Oct. 2019.

TU Munich, Tenure Track Assistant Professorship in Urban Productive Ecosystems, TUM School of Life Sciences, member of the appointment committee. June – Nov. 2019.

TH Deggendorf, Healthy and Sustainable Buildings, member of the appointment committee. From May – July 2019.

TU Munich, professorship in Construction Process Management, member of the appointment committee. Dec. 2017 – July 2018.

TU Munich, TT1000 assistant professorship for Real Estate Development / Real Estate Business, chairman of the appointment committee. Dec. 2017 – July 2018.

Chair of the evaluating committee in the process of Institutional Evaluation of the Department of Architecture at the TU Darmstadt. Feb. 2017 – Feb. 2018.

Member of the evaluation committee of the Department of the Built Environment, University of Eindhoven, Nov. 2016.

TU Munich, professorship for Green Technologies in Landscape Architecture. Member of the appointment committee. May – July 2016.

Hochschule Augsburg, professorship for Industrial Building and Production Technology, external consultant. Oct. 2015.

KIT – Department of Architecture, professorship for Sustainable Building, member of the appointment committee. May – Oct. 2015.

TU Munich, Professorship for Building Technology and Building Climate Control (successor to Prof. Gerhard Hausladen), chairman of the appointment committee. Aug. – Dec. 2012.

HS Regensburg, professorship for Sustainability of Buildings and Development Structures, external consultant, Dec. 2011.

### **Visiting Scholars:**

Dr. Jörn von Grabe, University of Liechtenstein. Stay within the framework of the August-Wilhelm-Scheer Guest Professorship Program. Apr. – Aug. 2017.

Prof. Dr. Petra Liedl, University of Texas at Austin. Stay within the framework of the August-Wilhelm-Scheer Guest Professorship Program. Sept. 2016 – Aug. 2017.

Prof. Dr. Michael Braungart, Leuphana University. Fellow at the Department of Architecture, Host: Prof. Dr. Werner Lang. Apr. 2013 – Mar. 2016.

Prof. Dr. Mohamad T. Araji, University of Manitoba, Canada. Visiting Professorship, sponsored by TÜV SÜD Foundation. May – July 2014.

Ning Zhu, School of Architecture, Tsinghua University, Beijing, China.  
Visiting scholar within the framework of his dissertation. July – Dec. 2011.

### **Research Projects:**

“Energy-ecological analysis of large building stocks: KlimaLyse”

The Free State of Bavaria has set itself the goal of achieving a building stock that is as climate-neutral as possible. The challenge here lies in the large number of different buildings with different uses, ages and conditions, as well as the available data on the individual buildings.



For this purpose, a tool is being developed to analyse the application of various renovation measures and energy standards to the building stock. Artificial intelligence methods are used to calculate the energy requirements for heterogeneous buildings and different renovation scenarios. These calculations use data from a digital twin and existing databases to create reliable energy efficiency forecasts, which provides a sound basis for decision-making when implementing renovation measures. Duration: 08/2023 – 12/2025. Funding amount: Chair ENPB: € 254,330.00

“CircularFTmehrRAUM”

The so-called ‘circularity building’ aims to demonstrate that fundamentally sustainable buildings can be developed and constructed that can be built, operated and reused emission-free over their entire life cycle using environmental energy, renewable raw materials and circular construction methods. This supported project serves as a flagship project that fundamentally promotes the discourse on circular and emission-free buildings and, as a pilot project, significantly supports the widest possible imitation. Duration: 06/2023 – 06/2025. Funding amount: Chair ENPB: € 240,000.00

“Pilot project circular economy”:

The implementation of a pilot project for circular and sustainable construction follows the resolution of the Bavarian State Parliament of April 26, 2022 (LT-Drs. 18/22398) to implement a continuous and consistent circular economy in a state building construction measure. In this context, the use of building materials made from recycled materials and of constructions that promote the reuse and recycling of building materials without any loss of quality is to be pursued. Duration: 08/2023 – 12/2024. Funding amount: Chair ENPB: € 100,000.00

“Life Cycle Assessment of office building”

The new four-storey office building was planned as a timber-hybrid construction in accordance with the KfW 40 standard. In order to be able to quantify the aspirations of sustainable architecture in retrospect, the Chair of Energy Efficient and Sustainable Planning and Building is working on and advising the client on life cycle assessment.

For this purpose, a detailed life cycle analysis of cost groups 300 and 400 is prepared and compared with the requirements of the Quality Seal for Sustainable Buildings (QNG). Duration: 11/2023 – 07/2024. Funding amount: Chair ENPB: € 52,000.00

“NKI Bauklima kommunal”:

Joint project to develop effective measures for the energy-efficient renovation of the building stock at the municipal level. Project participants: Deutsche Umwelthilfe e.V.; Bildungswerkstatt für nachhaltige Entwicklung e.V. Duration: 04/2023 – 03/2026. Funding amount: Chair ENPB: € 234,300.00.

“NAWAREUM Gärtnergebäude”:

Life cycle-based ecological assessment of the historic building in need of renovation. LS ENPB together with the State Building Authority Passau and the Technology and Support Center Straubing. Duration: 12/2022 – 12/2024. Funding amount: Chair ENPB € 26,400.00.

“Creating NEBOurhoods Together – Munich Neuperlach”:

Lighthouse project within the framework of the New European Bauhaus (NEB) for developing a sustainable urban vision for the Neuperlach district. Project funding: European Commission. Duration: 10/2022 – 03/2025. Funding amount: Chair ENPB: € 215,800.00.

“ECO+: On the way to positive environmental impacts of neighborhoods”:

Development of implementation strategies for positive construction in residential buildings. Project participants: TU Munich Professorship for Green Technologies in Landscape Architecture Dortmund, Junior Professorship for Resource-Efficient Building, Öko Bau GmbH. Project funding: German Federal Environmental Foundation (DBU), Bavarian Construction Industry Foundation. Duration: 10/2022 – 12/2024. Funding amount: Chair ENPB: € 192,000.00.

„EDUwood.CO“

Climate protection potential of the CUBE ONE launch building on the campus of the Technical University of Nuremberg. Comparative analysis of the component structures of CUBE ONE (CO) with the results of the EDUwood research project. Duration: 01/2024 – 12/2024. Funding amount: Chair ENPB: € 40,000.00.

“EDUwood”:

Analysis of the climate protection potential of timber construction on the campus of the Technical University of Nuremberg. Project participants: Chair of Architecture and Timber Construction, Chair of Timber Construction and Building Structures.

Project sponsors: Bavarian State Ministry of Science and Art, Bavarian State Ministry of Housing, Building, and Transport, Bavarian State Ministry of Food, Agriculture, and Forestry. Duration: 09/2022 – 11/2023. Funding amount: Chair ENPB: € 104,440.00.

“Urban Green Infrastructure (UGI)”:

Graduate school for promoting young scientists in the field of integrated urban planning. TUM together with Helmholtz Center Munich, German Research Center for Environmental Health, University of Augsburg. Project sponsor: German Research Foundation (DFG). Duration: 04/2022 – 09/2026. Funding amount: Chair ENPB: € 446,800.00.

“CircularGreenSimCity - Holistic Resource-Efficient Consideration of Urban Districts”:

Subproject: Life cycle-based energy, ecological, and cost evaluation of buildings and urban greenery in urban districts. Project partners: University of Applied Sciences Stuttgart, City of Würzburg, City of Asperg, Drees & Sommer SE. Project sponsor: Jülich.

Duration: 04/2022 – 03/2025. Funding amount: Chair ENPB: € 307,900.00.

“Max Planck Gesellschaft (MPG) Neighborhood Concept”:

Development of a sustainability strategy for the buildings of the MPG using the example of the new Life Science Campus in Martinsried. Project partners: Chair of Building Technology and Climate Responsive Design. Project sponsor: MPG. Duration: 04/2022 – 05/2025. Total funding amount: € 622,490.00. Funding amount: Chair ENPB: € 311,240.00.

“Circularity, Digital Transformation and Urban Spatial Organisation”:

Seed Fund Project. Duration: 03/2022 – 02/2023. Funding amount: Chair ENPB: €50,000.00.

“Building LAB Regensburg”:

Development of strategies for implementing buildings with positive environmental impacts.

Funded by the Bavarian Construction Industry Foundation. Duration: 08/2021 – 05/2023.

Funding amount: Chair ENPB: € 57,425.00.

“Green City of the Future – Climate-Resilient Neighborhoods in a Growing City”:

Joint project with partners from the City of Munich, Ludwig Maximilian University of Munich, and IÖW Berlin. Funded by the Federal Ministry of Education and Research.

Funding code: 01LR2017A. Implementation phase. Duration: 12/2021 - 04/2024.

Funding amount: Chair ENPB: € 372,800.00.

“Emissions-Free Building Sector”:

Identification and application of criteria for developing emission-free buildings considering the entire life cycle. Chair ENPB together with the Bavarian State Ministry for Environment and Consumer Protection (StMUV). Duration: 02/2021 – 04/2022. Funding amount: Chair ENPB: € 69,300.00.

“Life Cycle-Based Ecological Assessment of the New NAWAREUM Building in Straubing.”

In addition, determination of the compensation capability of the outdoor facilities to store the CO<sub>2</sub> emissions of the new building. Chair ENPB together with the State Building Authority Passau and the

Technology and Support Center Straubing. Duration: 02/2021 – 07/2021.  
Funding amount: Chair ENPB: € 25,000.00.

"Climate-Friendly Building - Model Projects with the Bavarian State Ministry of Housing, Building and Transport":

Joint project "Center for Urban Nature and Climate Adaptation (ZSK)". Research on solutions for climate protection and climate change adaptation in housing construction. Chair ENPB together with the Chair of Urban Water Management, Prof. Helmreich TUM, and Prof. Bienert IREBS-University of Regensburg. Duration: 12/2020 – 03/2024. Funding amount: Chair ENPB: € 263,500.00.

"Raw Material Mapping Bavaria"

Investigation of a comprehensive mapping of the anthropogenic stock, particularly the materials used in the residential building stock, and the resulting material flows.

Methods developed by the Chair and previous findings on material flow models are to be bundled, expanded, and adapted to regional conditions. Duration: 12/2020 – 01/2022. Funding amount: Chair ENPB: € 40,000.00.

"Evaluation of Building Design Variants in Early Design Phases Based on Adaptive Detailing Strategies. Subproject 4: System-Based Simulation of Energy Flows".

Joint research project of the DFG in 5 subprojects at the locations Bochum, Munich, Berlin, and Duisburg-Essen. Phase 2 - Duration: 04/2020 - 07/2023. Funding amount: Chair ENPB: € 320,000.00.

"BEWOopt: Implementation Strategies for Realizing Ecologically and Economically Optimized Serial Type Houses for Affordable Housing".

Funded by the Bavarian Construction Industry Foundation and the WBG – Housing Company Nuremberg. Duration: 01/2020 - 12/2021. Funding amount: Chair ENPB: € 80,000.00.

"Densification in the Context of Climate Change".

Funded by the Bavarian State Ministry for Environment and Consumer Protection.

Application: Chair ENPB together with the Chair of Strategy and Management of Landscape Development, Prof. Dr. Stephan Pauleit, and the Chair of Architectural Informatics, Prof. Dr. Frank Petzold, TUM. Duration: 01/2020 - 12/2022. Funding amount: Chair ENPB: € 289,000.00.

"LCA & Ecological Assessment of CO2 Emissions and Primary Energy Demand of a multi-story housing unit in Berlin". Client: Ottmann Architects Munich. Duration: 10/2019-02/2020.

Funding amount: Chair ENPB: € 12,400.00.

"OfDataLyse".

Open database system for capturing, holding, and strategically evaluating heterogeneous datasets of large building portfolios. Client: BBSR Research Program Future Building.

Project partners: Prof. Dr. Isabell Nemeth, Study and Technology Center Feuchtwangen, Prof. Dr. Jochen Stopper, Professorship for Energy-Efficient and Sustainable Building of the Rosenheim Technical University of Applied Sciences, Department H 94 of the Building Department of the City of Munich. Duration: 12/2019-11/2021. Funding amount: Chair ENPB: € 65,000.00.

"Secondary Building Material Cycles in BNB as a Contribution to Resource-Efficient Construction".

Client: BBSR (Federal Institute for Building, Urban and Spatial Research in the Federal Office for Building and Regional Planning). Project participants: IBO – Austrian Institute for Building and Ecology GmbH, Ansbach University of Applied Sciences, TUM. Duration: 01/2019-09/2019. Funding amount: Chair ENPB: €12,500.00.

"EERAdata":

Funded by the European Commission EASME Horizon 2020 Framework to create a robust, secure,

and scalable data management framework. Duration: 04/2019-10/2021. Funding amount: Chair ENPB: € 315,900.00.

“NuData Campus: The University on the Way to an Energy-Efficient Building Operation”.  
Funded by the Federal Ministry for Economic Affairs and Energy (BMWi). Funding code: 03ET1648B.  
Duration: 04/2019-03/2022. Funding amount: Chair ENPB: € 500,000.00.

“FT OptiMO - Monitoring-Based Optimization of Operating Costs and Comfort to Promote Sales of New Buildings in Solid Construction”.  
Funded by the Bavarian Construction Industry Foundation and the company Ferdinand Tausendpfund GmbH & Co. KG. Duration: 01/2019 - 12/2020. Funding amount: Chair ENPB: € 35,000.00.

“NuOpt Office – Optimization of Energy and Resource Efficiency in Office Buildings Using a User Data Analysis”.  
Funded by the Bavarian Construction Industry Foundation and the company AS Bau Hof GmbH Hof.  
Duration: 01/2019 - 12/2020. Funding amount: Chair ENPB: € 100,000.00.

“Green City of the Future – Climate-Resilient Neighborhoods in a Growing City”.  
Joint project with partners from the City of Munich, Ludwig Maximilian University of Munich, and IÖW Berlin. Funded by the Federal Ministry of Education and Research. Duration: 10/2018 - 09/2021.  
Funding amount: Chair ENPB: € 413,000.00.

“Green City of the Future – Climate-Resilient Neighborhoods in a Growing City”.  
Joint project with partners from the City of Munich, Ludwig Maximilian University of Munich, and IÖW Berlin. Funded by the Federal Ministry of Education and Research. Definition phase. Duration: 05/2017 - 09/2018. Funding amount: Chair ENPB: € 138,500.00.

"Eco+Office – Life Cycle-Based CO2-Neutral Plus Energy Building – Modernization vs. New Construction”.  
Funded by the Bavarian Construction Industry Foundation and the company AS Bau Hof GmbH Hof.  
Duration: 01/2018 - 05/2019. Funding amount: Chair ENPB: € 110,000,00.

"Design2Eco - Life Cycle Consideration in the Planning Process of Office and Administrative Buildings. Decision Criteria and Optimization Options for Early Planning Phases".  
Funded by the Research Initiative Future Building, BayWa AG, Bavarian Construction Industry Foundation, and ATP Sustain GmbH. Duration: 12/2016 - 11/2018. Funding amount: Chair ENPB: € 99,000.00.

"Evaluation of Building Design Variants in Early Design Phases Based on Adaptive Detailing Strategies. Subproject 4: System-Based Simulation of Energy Flows".  
Joint research project of the DFG in 5 subprojects at the locations Bochum, Munich, Leuven, and Duisburg-Essen. Phase 1 - Duration: 01/2017 - 12/2019. Funding amount: Chair ENPB: € 165,800.00.

"Life Cycle Analysis and Ecological Assessment as well as Monitoring of the Energy Behavior of Different Building Envelopes in Solid Construction for an Office Building in Regensburg".  
Client: Fa. Tausendpfund GmbH & Co.KG Regensburg. Duration: 01/2016 - 05/2019.  
Funding amount: Chair ENPB: € 26,600.00.

"EmBuild – Empower Public Authorities to Establish a Long-Term Strategy for Mobilizing Investment in the Energy Efficient Renovation of the Building Stock".  
European joint project with ten international partners. Duration: 03/2016 - 08/2018.  
Funding amount: Chair ENPB: € 194,000.00.

"BAMB – Building as Material Banks".

European joint project with 16 international partners from 8 countries. Duration: 09/2015 - 02/2019.  
Funding amount: Chair ENPB: € 115,000.00.

"Monitoring Ecoleben Penzberg".

Funded by the Bavarian Construction Industry Foundation and the company Krämmel Wohn- und Gewerbebau GmbH Wolfratshausen. Duration: 12/2016 - 05/2019. Funding amount: Chair ENPB: € 73,000.00.

"Potentials of Low-Temperature Networks to Increase the Share of Renewable Energies in Neighborhoods".

Joint project with the Chair for Building Technology and Climate-Friendly Building (Prof. Auer).  
Duration: 09/2015 - 08/2017. Funding amount: Chair ENPB: € 52,700.00.

"Development and Evaluation of a Cradle to Cradle® Inspired Plus Energy House Using the Example of the Solar Decathlon 2015 Competition Entry".

Funded by the Research Initiative Future Building. Duration: 06/2015 - 09/2016. Funding amount: Chair ENPB: € 62,100.00

"Ecoleben Penzberg – Application of Hybrid Construction and Ecological Assessment".

Funded by the Bavarian Construction Industry Foundation and the company Krämmel Wohn- und Gewerbebau GmbH Wolfratshausen. Duration: 05/2014 - 06/2015. Funding amount: Chair ENPB € 75,000.00.

Housing Project "wagnisART"

Development of an innovative and future-oriented housing project considering a holistic sustainability approach with a focus on minimizing the consumption of fossil fuels and the ecological footprint.

Client: Housing cooperative wagnis eG Munich with support from the Upper Building Authority in the Bavarian Ministry of the Interior. Duration: 03/2014 - 12/2016.

Funding amount: Chair ENPB: € 22,000.00.

"Facade Elements for Hybrid Construction Methods. Prefabricated Integral Facade Elements in Timber Construction Methods for Use in New Hybrid Steel Concrete High-Rise Buildings".

In collaboration with the Chair of Timber Construction and Building Structures and the Chair of Concrete and Masonry Structures, TUM. Funded by the Bavarian Construction Industry Foundation.  
Duration: 02/2014 - 09/2016. Funding amount: Chair ENPB: € 58,700.00.

"Climate Protection and Green Infrastructure in the City".

Research project to develop strategies for reducing greenhouse gas emissions and adapting Bavarian cities to climate change. Funded by the Bavarian State Ministry for Environment and Consumer Protection. In collaboration with the Chair of Strategy and Management of Landscape Development, Prof. Dr. Stephan Pauleit. Duration: 06/2013 - 07/2017. Funding amount: Chair ENPB: € 498,400.00.

"Energy-Efficient University. Campus Information Modelling (HoEff-CIM)".

Research project to develop a step-by-step plan for implementing energy efficiency measures on a university campus. Funded by the Federal Ministry of Economics and Technology (BMWi).

In collaboration with the HM Hochschule München University of Applied Sciences and Ebert-Ingénieure GmbH. Duration: 05/2013 - 04/2017. Funding amount: Chair ENPB: € 330,100.00.

"Hochwildehaus (DAV) – Optimizing the Environmental Impact of the New Replacement Building".

Duration: 8/2014 – 12/2015. Funded by the German Alpine Association (Deutscher Alpenverein DAV) Karlsruhe Division.

"A Building like a Tree – a City like a Forest; a Roadmap for the Munich Built Environment and its Connected Industries".

Research initiative by Prof. Dr. Michael Braungart, EPEA international environmental research GmbH, supported by the Institute of Advanced Studies TUM and the Faculty of Architecture TUM.

Duration: 04/2013 - 03/2016. Funding amount: Chair ENPB: € 210,000.00.

"Solar Thermal Glass Façades with Adjustable Transparency".

Research project to determine and present the potential of liquid-filled glass facade elements for reducing energy consumption and increasing building comfort. Funding by the European Commission, FP7-ENERGY-2013. Center for Sustainable Building (ZNB) in conjunction with 11 other research partners. Lead: University of Liechtenstein. Duration: 09/2013 - 08/2017. Funding amount: Chair ENPB: € 285,800.00.

"Energy Self-Sufficient Electromobility within the Showcase Electromobility: Energy Self-Sufficient Electromobility in the Smart-Micro-Grid from Single-Family Homes to Intelligent Parking Garages". Funded by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). Cooperation partners: Bayerische Motoren Werke AG Munich / SMA Solar Technology AG Niestetal / Chair of Energy Economics and Application Technology / Center for Sustainable Building (ZNB). Duration: 01/2013 - 06/2016. Funding amount: Center for Sustainable Building (ZNB): € 524,000.00.

"Study on Energy Efficiency Potential of Klinikum Ingolstadt"

Commissioned by Klinikum Ingolstadt GmbH Ingolstadt. Duration: 04/2012 - 10/2013.

Funding amount: Chair ENPB: € 54,270.00

"COST Action TU1104 – SMART ENERGY REGIONS".

COST Action of the European Commission to investigate and present the necessary strategies for the long-term creation of CO<sub>2</sub>-neutral regions in Europe, focusing on energy-efficient refurbishment, minimization of operational energy requirements, minimization of the use of embodied energy in the building sector, and implementation of low- and plus-energy buildings.

Duration: 03/2012 - 02/2016.

"Integrated Concept for Increasing Energy Efficiency in the Building Sector in Bavaria".

Center for Sustainable Building (ZNB) commissioned by the Association of the Bavarian Economy e. V. Munich (vbw). Duration: 11/2011 - 07/2012.

Funding amount: Center for Sustainable Building (ZNB): € 95,650.00

"Hybrid Ventilation – Copenhagen/Munich/London"

Commissioned by the Fraunhofer Institute for Building Physics Holzkirchen.

Duration: 12/2011 - 03/2012.

Funding amount: Chair ENPB: € 31,700.00

"Stadtlabor Nürnberger Weststadt"

Interdisciplinary research project for the development of livable and sustainable urban districts.

Center for Sustainable Building (ZNB) in cooperation with four other chairs of the faculties of architecture, civil and environmental engineering, and electrical and information technology.

Funded by the City of Nuremberg. Duration: 12/2011 - 03/2012. Funding amount: Chair ENPB: € 26,640.00.

"Membrane Constructions for Thermal Improvement of Existing Buildings (MESG)"

Supported by the "Project Management Jülich" on behalf of the German Federal Government.

Project management on behalf of Lang Hugger Rampp Architects GmbH (LHR), member of a team of eight national partners from the fields of science and industry. Duration: 2008 - 2012. Funding amount LHR € 140,000.00.

#### "Re-Frame"

Research project of the European Commission for the development of highly insulating window frames and facade profile systems. Project management on behalf of the Chair for Building Technology, Prof. Dr. (Univ. Rom) Thomas Herzog, in conjunction with seven international partners from the fields of academia and industry. Duration: 2001 - 2006. Funding amount Chair Building Technology; Prof. Dr. Thomas Herzog TUM € 168,300.00.

#### "Building Systems for Schools in Hot Climates"

In cooperation with Prof. Dr. (Univ. Rom) Thomas Herzog, Dr.-Ing. Kurt Stephan Munich, and Center for Applied Energy Research (ZAE Bayern e.V.) Munich. Duration: 2001 - 2004.

#### "Sol-Arch-Data"

Research project of the European Commission to establish a basis for integrating knowledge on solar energy utilization into training concepts for architects.

Chair of Prof. Dr. (Univ. Rom) Thomas Herzog together with Prof. Stefan Behling, London, and Nikolaus Kuhnert, Arch+ Berlin. Duration: 1996 - 1997. Funding amount: Chair Building Technology; Prof. Dr. Thomas Herzog TUM DM 98,000.00.

### **Research Cooperation Projects:**

#### "Cluster Sustainable Real Estate" (CSRE)

The CSRE was founded at the Technical University of Munich (TUM) in 2020. It is a interdisciplinary platform for knowledge exchange, grounded in the tradition of TUM of fostering discourse between researchers and professionals. (<https://www.arc.ed.tum.de/en/csre/csre-vision/>). Prof. Dr. Werner Lang is co-founder and member of the Scientific Committee.

#### "TUM Global Incentive Fund".

Project support for cooperation between TUM and Ain Shams University Cairo and the American University in Cairo 2017 – 2018.

#### "Project Platform Energy + Innovation (PPE+I)".

The Project Platform Energy + Innovation is a cooperation project between the Technical University of Munich and the Bavarian construction industry. It was started in 2014 to combine practical experience and the needs of the construction industry with innovative solutions from scientific research work (<https://www.ed.tum.de/ppe/plattform/>). Basic funding by BBIV (since 2014): € 1,110,000.00. Achieved third-party funding (since 2014): € 2,075,000.00.

#### "Center for Urban Nature and Climate Adaptation" (ZSK).

Since June 2013, the ZSK has combined the disciplines of urban and landscape planning, architecture, engineering and ecology. The aim is to bundle research activities in the field of climate protection and climate adaptation with a focus on utilizing ecosystem services of urban green spaces. (<https://www.zsk.tum.de/en/zsk/home/>). Co-founders: Prof. Dr. Stephan Pauleit & Prof. Dr. Werner Lang.

### **Dissertation:**

"Typological and experimental investigation of the construction of double-skin facades in tall buildings with particular consideration of their importance for the energy balance and the possibility of using environmental energies". Technical University of Munich, Chair for Building Technology, Prof. Dr. (Univ. Rom) Thomas Herzog, 2000. Overall grade: Summa Cum Laude.

## **Patents and Registered Designs:**

"Modular Wall Systems for Exhibition and Trade Fair Construction".  
Patent No. 101 29 829, published on May 08, 2003.

"Wooden Lamellas for Daylight Control as well as for Sun and Heat Protection".  
Registered Design No. 49906950.1, published on June 19, 1999.  
Patent No. 199 24 882, published on Feb. 15, 2001.

## **Exhibition Development:**

Curator of the exhibition "Visionaries and Everyday Heroes. Engineers - Building - Future".  
Organizer: Oskar von Miller Forum in cooperation with the Museum for Architecture and Engineering Art NRW. Oskar von Miller Forum, Munich, 10. Nov. 2017 – 14. Jan. 2018.

Concept Development and Organization of the poster exhibition "Sustainable Building"  
at the University of Texas School of Architecture, Mebane Gallery, Goldsmith Hall, 2008.

Project Coordinator for the realization of a permanent exhibition on innovative facade systems as part  
of the "Technical Center" for the Faculty of Architecture of the Technical University of Munich, 2006.

Concept Development and Organization of the special exhibition for the international conference  
"Intelligent Building Middle East 2005" in Manama, Bahrain, 2004 - 2005.

Concept Development and Organization of the "Special Exhibition on Intelligent Building Envelopes" at  
the international building exhibition BAU 2003, Entrance East, New Munich Trade Fair, 13. - 18. Jan.  
2003.

Concept Development and Organization of the international traveling exhibition "Thomas Herzog:  
Architecture and Technology" at the German Architecture Museum Frankfurt, 2001 - 2002, followed by  
exhibitions in Rome, Beijing, Tokyo, Linz, Shanghai, Mexico City.

## **Exhibition of Own Work:**

"Architectural Highlights" – District Office Starnberg; Residential house in Herrsching, 10. - 26. Nov.  
2010.

Special Show "Intelligent Building Envelopes"  
Exhibit on wooden lamellas as a heat and sun protection system for "Second-Skin Facades" at the  
Bau 2003, Entrance East, New Munich Trade Fair, 13. - 18. Jan. 2003.

"Innovation Center Intelligent Building Envelope"  
on the occasion of the special show "Clima Design" at the Bau 2003, Exhibition in the ICM Foyer, New  
Munich Trade Fair, 13. - 18. Jan. 2003.

Exhibit on Wooden Lamellas as a Heat and Sun Protection System for "Second-Skin Facades"  
Special show "The Facade of the Future" of the "fensterbau frontale 2002", Nuremberg Trade Fair, 21.  
- 23. March 2002, and the "fensterbau frontale 2000", Nuremberg Trade Fair, 23. - 26. March 2000.



Exhibit on Wooden Lamellas as a Heat and Sun Protection System for "Second-Skin Facades" Exhibition "Thomas Herzog: Architecture and Technology" at the German Architecture Museum Frankfurt, 7. Dec. 2001 - 3. March 2002.

Projects Review 1985 - 1986  
Annual exhibition, Architectural Association London, 1986.

### **Exhibition of Student Work:**

"Urban Life 2080"

Exhibition of student works in the interdisciplinary project of the Chair for Energy-Efficient and Sustainable Planning and Building of the Summer Semester 2016 in cooperation with the City of Munich, Department of Urban Planning and Building Regulations.  
PlanTreff Blumenstraße 31, April – July 2017.

"Green Building - Sustainable Retailers Worldwide"

Exhibition of student works on a design project at the Chair for Energy-Efficient and Sustainable Planning and Building at the Technical University of Munich (TUM).  
In cooperation with the Chair for Building Climatology and Building Services, Prof. Dr. Gerhard Hausladen, TUM. BMW Headquarters, Munich, Sept. 2013.

### **Awards for Student Work:**

1st Prize for the project "Das neue Marxzentrum – Gemeinschaft im Mittelpunkt" by students of the Master's program in Resource-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., 15.01.2025, BAU 2025, Munich. (one of two joint 1<sup>st</sup> prizes)

2nd Prize for the project "Freizeit – Campus neu Denken" by students of the Master's program in Resource-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., 15.01.2025, BAU 2025, Munich. (one of two joint 2nd prizes)

2nd Prize for the project "Velo City" by students of the Master's program in Resource-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., 15.01.2025, BAU 2025, Munich. (one of two joint 2nd prizes)

Special Award for the project "re.create" by students of the Master's program in Resource-Efficient and Sustainable Building, TUM. Competition "DGNB Sustainability Challenge" of the German Sustainable Building Council, Stuttgart, 21.9.2020.

1st Prize for the project "re.create" by students of the Master's program in Resource-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., 20.02.2020, Bautech 2020 Fair, Berlin.

1st Prize for the project "TeilWerk" by students of the Master's program in Energy-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V.,

Munich Trade Fair in cooperation with the architecture magazine BAUMEISTER, 18.1.2019, BAU 2019, Munich.

2nd Prize for the Master's thesis "Reversible Monument. Revitalization of Destroyed Gründerzeit Buildings in Mostar BIH" by Jürgen Priesner, Master's program in Energy-Efficient and Sustainable Building, TUM. Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., 22.02.2018, Bautec 2018 Fair, Berlin.

1st Prize for the project "Urban Life 2080" by students of the Master's program in Energy-Efficient and Sustainable Building, TUM.  
Competition "Students | Shape | Future" of the Federal Association for Old Building Renovation e.V., Munich Trade Fair in cooperation with the architecture magazine BAUMEISTER, 20.1.2017, BAU 2017, Munich.

## Peer-reviewed Journal Articles and Conference Papers

### 2024

Banihashemi, F.; Weber, M.; Deghim, F.; Zong, C.; Lang, W.: Occupancy modeling on non-intrusive indoor environmental data through machine learning. *Building and Environment*, 254, 2024, 111382. <https://doi.org/10.1016/j.buildenv.2024.111382>

Banihashemi, F.; Weber, M.; Lang, W.: Deep learning for predictive window operation modeling in open-plan offices. *Energy and Buildings* 310, 2024, 114109. <https://doi.org/10.1016/j.enbuild.2024.114109>

Theilig, K.; Lourenço, B.; Reitberger, R.; Lang, W.: Life cycle assessment and multi-criteria decision-making for sustainable building parts: criteria, methods, and application. *The International Journal of Life Cycle Assessment*, 2024. <https://doi.org/10.1007/s11367-024-02331-9>

Zong, C.; Chen, X.; Deghim, F.; Staudt, J.; Geyer, P.; Lang, W.: A holistic two-stage decision-making methodology for passive and active building design strategies under uncertainty. *Building and Environment*, 2024, 111211. <https://doi.org/10.1016/j.buildenv.2024.111211>

Zong, C.; Sun, Y.; Lang, W.: System Dynamics Modeling of Life Cycle Carbon Footprints for Building Wall Insulation Materials, 2024. *IOP Conf. Ser.: Earth Environ. Sci.* 1363 012066. DOI 10.1088/1755-1315/1363/1/012066

de Souza Rocha, F.; Reitberger, R.; Staudt, J.; Lang, W.: Circular Economy Strategies in Densification and Refurbishment of Residential Buildings – State of Application and Future Directions. *Circular Economy and Sustainability*, 2024. <https://doi.org/10.1007/s43615-024-00365-7>

Vollmer., M.; Theilig, K.; Hope, G.; Akca, N.; Lang, W., Albus, J.: Combining parametric life cycle assessment (LCA) and multi-criteria decision making (MCDM) for developing sustainable residential neighborhoods. 2024, *IOP Conf. Ser.: Earth Environ. Sci.* 1363 012064. DOI 10.1088/1755-1315/1363/1/012064

Reitberger, R.; Pattnaik, N.; Parhizgar, L.; Trost, C.; Yazdi, H.; Rahman, MA; Pauleit, S.; Roetzer, T; Pretzsch, H.; Traidl-Hoffmann, C.; Ludwig, F.; Reischl, A.; Plaza Garcia, MP; Lang, W.: A Systems Perspective on the Interactions Between Urban Green Infrastructure and the Built Environment, 2024, *IOP Conf. Ser.: Earth Environ. Sci.* 1363 012071. DOI 10.1088/1755-1315/1363/1/012071

Reitberger, R.; Palm, N.; Palm, H.; Lang, W.: Urban systems exploration: A generic process for multi-objective urban planning to support decision making in early design phases, *Building and Environment*, 254, 2024, 111360. <https://doi.org/10.1016/j.buildenv.2024.111360>

Theilig, K; Merk, D; Blömer, T; Lang, W; Winter, S; Birk, S: Multi-criteria decision making for timber constructions: analysis of ceiling types using utility analysis, 2024 IOP Conf. Ser.: Earth Environ. Sci. 1363 012096. DOI 10.1088/1755-1315/1363/1/012096

## 2023

Ehlers, N.; Schulze, K.; Zong, C; Vollmer, M.; Schroeter, S.; Lang, W.: A holistic analysis of sustainability metrics at an urban district scale. 2023 IOP Conf. Ser.: Earth Environ. Sci. 1196 012071. DOI 10.1088/1755-1315/1196/1/012071

Banihashemi, F.; Weber, M.; Dong, B.; Carlucci, S.; Reitberger, R.; Lang, W.: Window state or action modeling? An explainable AI approach in offices. *Energy and Buildings* 298, 2023, 113546. <https://doi.org/10.1016/j.enbuild.2023.113546>

Vollmer, M; Theilig, K; Takser, I; Reitberger, R; Lang, W: Life cycle-based parametric optimization of buildings towards climate neutrality and its implications for environmental protection. *IOP Conference Series: Earth and Environmental Science* 1196 (1), 2023, 012050. <https://iopscience.iop.org/article/10.1088/1755-1315/1196/1/012050>

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Marx, D.; Reitberger, R.; Kleeberger, M.; Lang, W.: Automated workflow for simulating the effect of green façades on indoor thermal comfort, *Journal of Physics: Conference Series* 2600, 092007, 2023. DOI 10.1088/1742-6596/2600/9/092007

Reitberger, R; Theilig, K; Vollmer, M; Takser, I; Lang, W.: Connecting building density and vegetation to investigate synergies and trade-offs between thermal comfort and energy demand – a parametric study in the temperate climate of Germany. 2023 IOP Conf. Ser.: Earth Environ. Sci. 1196 012034. DOI 10.1088/1755-1315/1196/1/012034

Theilig, K; Takser, I; Reitberger, R; Vollmer, M; Lang, W: Toward zero-emission buildings: a case study on a non-residential building in Germany using life cycle assessment and carbon sequestration of green infrastructure. 2023 IOP Conf. Ser.: Earth Environ. Sci. 1196 012046. DOI 10.1088/1755-1315/1196/1/012046

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"Sustainable Design becomes the Center Point of Education". Newspaper article in *Austin Business Journal*, Nov. 21–27, 2008, p. 16.

### **Lectures and Presentations:**

'Kreislauffähige Gebäude als Baustein für Klimaneutralität 2030.' Presentation delivered at the expert meeting on the new Würzburg Building Energy Standard (WES). Online event on Feb. 12, 2021

„Bauen mit einem positiven ökologischen Fußabdruck: Gebäude und Stadt.“ Presentation delivered at the 2<sup>nd</sup> networking event of the BayWISS collaborative doctoral college 'Infrastructure, construction and urbanization', online, Oct. 14, 2020

'Buildings as Material Banks.' Presentation delivered at the expert meeting 'Bau und Rückbau' of the German Environmental Action association (Deutsche Umwelthilfe e.V.), online, 28.10.2020

'Habitat 5.0 – Eine Internationale Wissenschaftskooperation zu nachhaltigem Bauen.' Presentation contributed to the Dialogue Forum 'Die Rolle nachhaltiger Baustoffe für eine Green Recovery Strategie auf dem afrikanischen Kontinent.' (Federal Ministry for Economic Cooperation and Development, BMZ), online, Sept. 14, 2020

'The European Patient: Climate Change and Well-Being in Cities'. Presentation delivered at the symposium 'Climate Change and Health: Initiating and Leading Transformational Change', hosted by the Center for International Health (CIH) at the Ludwig Maximilian University Munich in cooperation with the German Alliance on Climate Change and Health. March 18, 2020.

'Green cities.' Presentation given in the lecture series *Umwelt: Mission (im) Possible: Grüne Utopien verwirklichen.*, TUM. Dec. 10, 2019.

'Climate-responsive building'. Keynote lecture held at the annual meeting of the Bavarian State Ministry of Housing, Construction and Transport / Department of Public Building Construction. Regensburg, Oct. 24, 2019.

'Building in times of climate change.' Keynote lecture held at the ZAE event 'Energieforschung für die Umwelt', Bavarian Centre for Applied Energy Research (ZAE Bayern), Würzburg, July 12, 2019.

'First Session of the UN-Habitat Assembly of the United Nations Human Settlements Program'. Lecture following an invitation from UN HABITAT to Nairobi. Nairobi, Kenya, May 27–31, 2019.

'Climate change and urban planning.' Lecture held at the CIH, LMU Munich und KLUG, German Alliance for Climate Change & Health. Munich, May 2019.

'How realistic is downsizing? Insights from research and personal practice.' Address given at 'Berliner Energietage' on optimizing floor space use to increase efficiency and reduce housing shortages. Berlin, May 2019.

Presentation during a trip to China following an invitation from the South China University of Technology and the Sino-German Centre for Research Promotion in Guangzhou, Shenzhen and Hong Kong for future cooperation, March 10–15, 2019.

Discussion round on the topic of 'Climate change and the city' at the opening of the Bavarian Climate Week and the Streetlife Festival with the Bavarian Minister of the Environment, Dr. Marcel Huber, and other parties involved in the organization of the event on September 8, 2018.

'Buildings in the context of the circular economy'. – Lecture at the Bavarian Construction Industry Association and the Verband der Wirtschaft für Emissionshandel und Klimaschutz e.V.. Munich, Sept. 2018

'Sustainable Building: Efficiency – Consistency – Sufficiency'. – Lecture at the Rachel Carson Center. Munich, April 2018.

'Green Urban Infrastructure – Challenges and Solutions'. 1<sup>st</sup> International Conference 'Towards a better Quality of Life'. Plenary Lecture. Technical University of Berlin, Campus El Gouna, Egypt, Nov. 24-26, 2017.

'Energy Efficiency'. Keynote lecture held for 'COSIMENA - Clusters of Scientific Innovation in the Middle East and North Africa' at the Quality of Life Conference, TU Berlin – Campus El Gouna, Egypt, Nov. 24–26, 2017.

'The municipality as the key to sustainable building'. Keynote address at the 'Municipal Climate Protection – Ceremony and Congress' commemorating the tenth anniversary of the European Energy Awards (eea) in Bavaria. Bavarian State Ministry of the Environment and Consumer Protection, Munich. Nov 6, 2017.

'Totally Green: Sustainable Design at all Scales'. Keynote lecture held at the Green Design Biennale 2017 in Mostar, Bosnia-Herzegovina. Nov. 4–7, 2017.

'The Green City of Tomorrow'. Lecture for the series 'Strategies for the Future – Technology That Thinks Ahead. Sustainable', organized by the TUM Evangelical congregation, Munich-Garching, Oct. 24, 2017.

'The Key for Buildings with a Positive Footprint'. Lecture for PHD Days series, Circularity in the Built Environment, TUM, March 13, 2017.

'Energy Efficiency in the Neighborhood – Supply, Rebuild, Activate'. Keynote lecture for the progress programme of the TU Dortmund. Dortmund, Nov. 30, 2016.

'Innovation: The Challenge of the Unprecedented'. Expert conference, keynote talk, workshop 1: Innovative building during climate change. Akademie für politische Bildung in Tutzing. Tutzing, April 22–23, 2016.

'Building with a positive ecological footprint – is it possible?'. Lecture for the series 'The Changing Climate' by the Rotary Club Germering. Munich-Germering, March 3, 2016.

'Sustainable Buildings with a Positive Footprint'. Keynote Speaker DAAD – TUM Asia Research Symposium, Singapore Institute of Technology, Singapore Polytechnic (SIT@SP Building). Singapore, Nov. 23–24, 2015.

'Positive Buildings for a Sustainable Future'. Lecture at the FLUDIGLASS workshop of the Centre for Sustainable Building, Oskar von Miller Forum, Munich, Nov. 3, 2015.

'Energy Efficiency Centre Würzburg'. Lecture at the 25<sup>th</sup> meeting of the working group for Energy-Efficient Building of the Supreme Building Authority at the Bavarian Ministry of the Interior, Construction and Transport, Munich, Oct. 1, 2015.

'Implementing the cradle-to-cradle principle in the building sector – pilot projects'. Lecture at the conference 'Closed-loop Economy and Landfills in Construction. Sustainable, Affordable, Regional'. Organized by the Bavarian Construction Industry Association. Bavarian Chamber of Civil Engineers, Munich, July 8, 2015.

'Case studies on practically implementing the energy transition in the construction sector'. Lecture for the 'Building Practice Studies' series of the Chair of Structural Analysis at the TU Munich in the summer semester 2015. Munich, July 1, 2015.

'Sind wir noch zu retten?' Reflections on the role of architecture and engineering in times of climate change and resource depletion. Keynote lecture for 'SOKA-BAU im Gespräch' event held at SOKA-Bau, Wiesbaden, March 24, 2015.

'Sustainable Energy Policies and future-oriented Building Design'. Keynote lecture during the UT Austin Energy Week. The University of Texas at Austin School of Architecture. 17. Feb. 2015.

'Smart Building Envelopes for Sustainable Building: The Energy Efficiency Centre in Würzburg, Germany'. Keynote lecture at the 9<sup>th</sup> International Conference on Advanced Building Skins in Bressanone, Italy. Oct. 28–29, 2014.

'Integrating urban built and green structures to improve climate change mitigation and adaptation: The approach of a recently initiated centre'. Lecture at the Third International Conference on Countermeasures to Urban Heat Island, Venice, Oct. 13–15, 2014.

'Sustainability as the Driver for Future-Oriented Design and Building. Research – Teaching – Design'. Keynote lecture at Tongji University, Shanghai, China. Sept. 22, 2014.

'Sustainability as a Driver for a new Building Culture'. Lecture for the Summer School of the University of Texas at Austin School of Architecture at the TUM, June 12, 2014.

'Stadtlabor Nürnberger Weststadt'. Lecture for the panel discussion 'Mobility in metropolitan regions', Oskar von Miller Forum, München, May 20, 2014.

'Sustainability as a Driver for a new Building Culture'. Lecture delivered to participants in the 'Interdisziplinäres Seminar für die Baureferendare (ISB)' of the Department of Architecture, TUM, Jan. 7, 2014.

'Best practice, problems and future responsibilities in the U.S. building sector'. Lecture as part of Module 19, 'Bauen International', in the ClimaDesign Master's programme, TUM. Dec. 10, 2013.

'The building envelope as a base for energy efficient and sustainable design'. Presentation delivered at the international symposium 'Energy (Ex)change: Learning from each other. Munich and Austin as regional centers of sustainable innovation, Topic 4: Envelope'. The University of Texas at Austin School of Architecture, Oct. 2, 2013.

'Sustainability as a Driver for a new Building Culture'. Keynote lecture for the Dean's lecture series at the University of Manitoba, Winnipeg, Canada, Sept. 26, 2013.

'Cradle to Cradle at the TUM'. Presentation delivered at the symposium 'Reduce – Reuse – Recycle'. Technical University of Munich, Sept. 18, 2013.

'Energy transition in Germany – opportunity for shaping the future'. Lecture for the TUM's lecture series 'Geschichten des Zivilingenieurwesens'. July 11, 2013.

'Urban Laboratory Nuremberg West'. Presentation at the 3rd International Exergy, Life Cycle Assessment and Sustainability Workshop & Symposium (ELCAS3), Nisyros, Greece, July 7–9, 2013.

'Potentials of energy-performance improvements'. Lecture during the 'FIW Wärmeschutztag 2013 - Energieeffizienz im Visier', Haus der Bayerischen Wirtschaft, Munich, June 7, 2013.

'What are the opportunities of the energy transition for the building industry?'. Lecture held at the 2013 annual meeting of the Nürnberger Baugruppe, Hersbruck, March 12, 2013.

'Façade Technologies for energy efficient and sustainable Buildings'. Lecture at the 'Envelopes for Green Buildings' Conference, Session 4: Solar Shading to Reduce AC Consumption, fensterbau/frontale india 2013, Mumbai, March 8, 2013.

'Urban Laboratory Nuremberg West – Defining the path to a sustainable future of existing cities'. Lecture for 'Entrepreneur Trip London - Department of Foreign Trade and Location Marketing at the Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology', Forum 'Urban Architecture and Mobility'. Topic 1: Urban Planning and Architecture – Focus on Energy Efficiency in Buildings, London, March 5, 2013.

'The Green and Climate-Conscious City'. Presentation at the 3<sup>rd</sup> workshop of Bayerische Klima-Allianz, Bavarian State Ministry for Environment and Health, Kloster Irsee, Dec. 12, 2012.

'Energy-efficient building stock in Bavaria – analysis and outlook'. Lecture held at the symposium 'Refurbishment and energy-efficiency of existing buildings', Educational Training Center in Nuremberg-Wetzendorf of the Society for Building Research and Professional Training of the Association of the Bavarian Building Industry, Dec. 5, 2012.

'Improving the energy performance of buildings'. Keynote lecture as part of the 'Parlamentarischer Abend' of the Association of the Bavarian Industry and Commerce (Vereinigung der Bayerischen Wirtschaft - vbw), Representation of the Free State of Bavaria to the European Union in Brussels, Nov. 12, 2012.

'Energy transition and education policy in the building industry'. Keynote lecture at the 'Strategy Day' of the Society for Building Research and Professional Training of the Association of the Bavarian Building Industry, Wernberg, Oct. 12, 2012.

'New envelopes for old buildings – the potential of using membrane systems for the thermal retrofitting of existing buildings'. Presentation at the Third International Symposium on Life-Cycle Civil Engineering, Hofburg, Vienna, Oct. 3 – 6, 2012.

'Engineering and management across cultures. How will we live and dwell tomorrow? Thoughts about sustainable ways to design and build the future'. Presentation to a group of international students in the summer university programme 'Faszination Forschung' at the Technical University of Munich, Aug. 13, 2012.

'Integrated Concept for the Improvement of the Energy Efficiency of Buildings in Bavaria'. Presentation at the symposium 'Energetische Gebäudesanierung' of the association 'Vereinigung der Bayerischen Wirtschaft e.V.' (VBW), Munich, Jul. 9, 2012.

'Sustainable Architecture and Information Technology'. Presentation at the symposium 'Informatik & Nachhaltigkeit trotz Wandel: Wechselwirkungen einer vernetzten Gesellschaft', organized by the Chair of Software & Systems Engineering and the Chair of Philosophy of Science, Technical University of Munich, Oskar von Miller Forum, Jul. 3, 2012.

'How are we going to live and dwell tomorrow? Thoughts about sustainable ways to design and build the future". Lecture for the lecture series 'Faszination Forschung', Technical University of Munich, Apr. 26, 2012.

'Aspects of the Application of Innovative Building with Membranes'. Presentation at the symposium 'Membrankonstruktionen zur energetischen Sanierung von Gebäuden' (MESG), Oskar von Miller Forum, Feb. 12, 2012.

'Buildings - the potential of positive energy footprints. Lecture held at the symposium 'Mobility and Immobility – Exploring Future Markets' organized by the Association of the Bavarian Industry (vbw), Kempinski Hotel Airport, Munich, Feb. 2, 2012.

'Urban Laboratory Nuremberg West'. Lecture held at the symposium 'Regenerative Design: Beyond LEED – how should we judge architecture in the future?' at The University of Texas at Austin School of Architecture, Jan. 27–30, 2012.

'Energy-efficient building as the key to a sustainable building culture'. Keynote lecture at the 1<sup>st</sup> Scientific Congress of the German Humboldt Association, Munich regional group, Carl Friedrich von Siemens Foundation, Munich-Nymphenburg. Jan. 25, 2012.

'The city as a resource – building the future with the existing building stock'. Lecture at the symposium 'Energy-Efficient and Sustainable Urban Development' of the Supreme Building Authority in the Bavarian Ministry of the Interior. 'Bavarian Inner Cities: Attractive - liveable - unique' initiative in the Germanic National Museum Nuremberg, Nov. 14, 2011.

'Examples of Low-Energy Building and Retrofitting in Bavaria - a Look into the Future'. Lecture at the congress 'Energy Transition - New Opportunities with the Building Industry', Center for the Building Industry in Nuremberg-Wetzendorf, Oct. 25, 2011.

'Energy Transition and the Existing Building Stock – Irreconcilable Conflict or Opportunity for an Enhanced Building Culture?' Presentation for the German Academy for Urban and Regional Planning / Bavaria Regional Group, as part of the symposium 'Energy Efficiency and Building Culture – Strategies for the Existing Building Stock'. Supreme Building Authority, Munich, Sept. 23, 2011.

'The City of the Future - what is E-Mobility?' Lecture at the Bavarian Real Estate Congress 2011. Bundesverband freier Immobilien- und Wohnungsunternehmen e.V., Landesverband Bayern e.V.. Oskar von Miller Forum. Munich, July 13, 2011.

'The Building as a Power Plant - Designing with Energy'. Lecture for the 'Energy and Design' lecture series of the Stiftung des BDA Bayern e.V. / Association of German Architects. Munich, July 5, 2011.

'New Challenges – How Must the Educational System Respond?' Lecture at the congress 'Assessing the Sustainability of Buildings in a National and International Context'. Fraunhofer Institute for Building Physics and Technical University of Munich. Oskar von Miller Forum, Munich, May 11, 2011.

'Sustainable Building as Key to a new Building Culture'. Presentation at the congress 'Building for the Future – sustainable, energy-efficient and innovative', organized by the Federal Ministry for Traffic, Building and Urban Development (BMVBS) at the 'Bau 2011' in Munich, Jan. 17, 2011.

'Energy and Design - the Key to a Sustainable Building Culture'. Keynote lecture at the 10<sup>th</sup> Munich Science Days. Audimax, Ludwig Maximilian University Munich, Oct. 24, 2010.

'New Envelopes for Old Buildings – The Potential of Current Membrane Technologies in Building Retrofits'. Presentation at the International Conference on Building Performance in Berlin (icbp), Federal Ministry for Economic Affairs and Technology, Berlin, Sep. 20, 2010'

'Sustainability in the Building Sector in the United States'. Presentation at the 4<sup>th</sup> IGSSE Forum 2010 of the Technical University of Munich at Raitenhaslach Monastery, Burghausen, June 17, 2010.

'Green Design'. Presentation at the 3-day workshop 'Energy Technology and Policy' at the AT&T Executive Education Conference Center, organized by Prof. Dr. Michael Webber, UT Austin, Jan. 14, 2010.

'Sustainable Architecture and Urban Design in the USA'. Presentation at the Technical University of Munich as part of the international Master's course 'ClimaDesign' of Prof. Dr. Gerhard Hausladen, Munich, Nov. 26, 2009.

'Building-Integrated Photovoltaics'. Presentation co-delivered with Prof. Lawrence Speck, PageSoutherlandPage, and Nick Littleton, Solar Array Ventures, at the 70<sup>th</sup> Annual Convention of the Texas Society of Architects / AIA at the George R. Brown Convention Center, Houston, Oct. 24, 2009.

'Green Design'. Presentation at the 3-day workshop 'Energy Technology and Policy' at the AT&T Executive Education Conference Center, organized by Prof. Dr. Michael Webber, UT Austin, Aug. 18, 2009.

'Architecture and Technology: Smart Design for Building the Future'. Presentation for the AIA Continuing Education Courses at the Austin Center for Architecture, Apr. 14, 2009.

'Smart Building Design: Technologies, Systems and Integrated Solutions for Future-Oriented Building'. Presentation at the interdisciplinary seminar ME 397 'Energy, Technology & Policy' at the Cockrell School of Engineering at UT Austin, Apr. 14, 2009.

'Re-Building the Future: Sustainable Design for Existing Buildings'. Presentation at the 'Research Seminar on Historic Preservation and Sustainability', UT Austin School of Architecture, Mar. 9, 2009.

'Design with Climate: Building for a Cooler Planet'. Keynote lecture at the 'Hot Science - Cool Talks' Outreach Lecture Series organized by the Environmental Science Institute and the Jackson School of Geosciences at the University of Texas at Austin, Feb. 27, 2009.

'From Climate to Design'. Presentation at the Department of History of Art and Architecture as part of the lecture series 'The Engineered World: Energy'. UT Austin, Cockrell School of Engineering, Nov. 13, 2008.

'Innovative Building Skins: Sustainable Energy Systems for Buildings: Challenges and Chances'. Presentation at the European Conference and Cooperation Exchange 2006, Austrian Chamber of Commerce, Vienna, Nov. 15, 2006.

'A Building System for School Buildings in Hot and Humid Climates'. Keynote lecture at the Conference 'Intelligent Building Middle East 2005'. Manama, Bahrain, Dec. 7, 2005.

'Architecture and Technology: Projects by Herzog + Partner, Munich'. Keynote lecture at the workshop 'Sol i Arkitekturen' of the Norwegian Chamber of Architects, Oslo, Nov. 4, 2005.

'Energy and Urbanization: The Challenge of the 21st Century'. Keynote lecture at the 23<sup>rd</sup> Arab Engineering Conference, Manama, Bahrain, Mar. 15, 2005.

'Glass for Intelligent Buildings'. Presentation at the International Symposium on the Application of Architectural Glass (ISAAG 2004), University of the Federal Armed Forces, Munich, Nov. 15, 2004.

'Architecture and Energy: Challenges and Solutions'. Presentation at the Huazhong University of Science and Technology (HUST), Wuhan, PR China, School of Architecture and Urban Planning, June 3, 2004.

'Energy and Architecture. Challenges and Chances'. Presentation at the expert meeting 'Energy Conservation in the Building Stock' organized by the Bavarian Centre for Applied Energy Research (ZAE), Oct. 8–9, 2003.



'Innovative Building Skins - Tendencies and Implementation'. Symposium 'Future-Oriented Building – Architecture for Builders and Developers' at the trade fair 'BAU 2003', Munich, Jan. 14–15, 2003.

'The Building Skin of the Future'. Rosenheim Window & Façade Conference 2002, Institute for Window Technology, Rosenheim, Oct. 17–19, 2002.

'Adjustable Solar Shading and Heat Conservation Louvers for Double-Skin Façades'. Lecture at the symposium 'Building Envelopes' organized by the Harvard Center for Design Informatics and the Massachusetts Institute of Technology, Munich, Oct. 12, 2001.

'Façades: Aesthetics and Building Design'. Seminar held with Dipl.-Phys. Thomas Kuckelkorn for the 'Eurowindow Academy' at the Institute for Window Technology in Rosenheim, Apr. 2, 2001 and Nov. 16, 2000.

'Solar Energy in Architecture and Urban Planning'. Presentation at the opening of the 'Solar Architecture' symposium of the 'Solarstadt München' initiative, organized by the City of Munich, Department of Health and Environment, Feb. 2, 2001.

'Functional, Constructive and Design Aspects of Façade Retrofits'. Presentation at the ZAE symposium on the 'ISOTEG' research project during the 'Energie Innovativ 2000' Congress, Nuremberg, Nov. 29, 2000.

'Heating and Solar Shading Devices Made of Wood for Double-Skin Façades', Rosenheim Window & Façade Conference, Oct. 19, 2000.

'Energy and Urbanization - the Challenge of the 21st Century'. Lecture at the world conference 'Urban 21', symposium 10: 'Solar Cities of the Future', Berlin, July 4–6, 2000.

'Adjustable Solar Shading and Heat Conservation Louvers for Transparent, Multi-Layered Glass Façades'. Symposium 'Eurosun 2000' in Copenhagen, June 19–22, 2000.

'Innovative Heat-Conservation and Sun-Protection Systems for Double-Skin Façades'. Lecture at the special exhibition 'Façades of the Future' at the trade fair 'fensterbau frontale 2000'. Nuremberg, March 24–25, 2000.

'Agenda for Architecture'. Workshop with Prof. Dr. Thomas Herzog and Dipl.-Phys. Thomas Kuckelkorn at the Department of Architecture of the Massachusetts Institute of Technology (MIT). Lectures: 'Sol-Arch-Data' and 'Multi-Layered Glass Façades', March 1999.

'Solar Energy Use in Buildings'. International Symposium 'Chances of Solar Technologies at the Turn of the Millennium', Bavarian State Government, Thuringian State Government, European Commission. Coburg, Nov. 8–9, 1998.

'Architecture und Technology - Working with the Building Skin'. Rosenheim Window & Façade Conference 1998, Institute for Window Technology, Rosenheim, Oct. 15–16, 1998.

'The Historical Development of Multi-Layered Building-Skins Made of Glass'. 10<sup>th</sup> Spring Academy of the TU Budapest und TU Munich, Apr. 22, 1998.

'Typology for Multi-Layered Building Skins Made of Glass'. Architects' day at the 'Fensterbau 98' international trade fair for window and façade technologies, Nuremberg, March 26, 1998.

'Energy - Basics for designing the Future'. Expert meeting at the TU Budapest, Hungarian Chamber of Engineers, Balatonfüred, Hungary, Apr. 24–26, 1997.

'Integration of Solar Energy Use in Architectural Concepts'. ZAE symposium '96: 'Low-energy building concepts: Heat-Light-Air', Würzburg, Nov. 18, 1996.

'European Charter for Solar Energy in Architecture and Urban Planning', 43<sup>rd</sup> IFHP World Congress: 'Habitation for the Future. Concepts, Processes, Products', Sendai/Japan, Oct. 14–17, 1996.

'Integrating Principles of Solar Energy Use into Architectural Concepts of Buildings'. Symposium 'Low-Energy Buildings' organized by 'renergie Allgaeu e.V.', Kempten, Aug. 12, 1996.

'An Attempt to Integrate the Knowledge of Solar Building into Teaching at Various Levels'. 4<sup>th</sup> European Conference 'Solar Energy in Architecture and Urban Planning', Berlin, Haus der Kulturen der Welt. March 26–29, 1996.

'An Attempt to Integrate the Knowledge of Solar Building into Teaching at Various Levels'. Florence International Conference for Teachers of Architecture, Florence, Università degli studi di Firenze, Sept. 28–30, 1995.

## **Panel Discussions:**

'Ecological Chemistry and Building'. Panel discussion at the 'Ecological Chemistry and Building symposium in honor of Prof. Friedhelm Korte, founder of the research field 'Environmental Chemistry'. Institute for Advanced Studies, Technical University of Munich, Feb. 13, 2014.

'Industry goes Green – Modern infrastructure as a prerequisite for a successful energy transition in Germany?'. Panel discussion organized by UBS Deutschland AG. Neue Börse München, Jun. 14, 2012.

'Definitions of sustainable Mobilities'. Panel discussion in conjunction with the 'International Scientific Conference on Mobility and Transport: Making Sustainable Mobilities – Interdisciplinary Perspectives'. Technical University of Munich, mobil.TUM 2011. Oskar von Miller Forum, Munich, April 7 – 8, 2011.

'2010 UT Austin Climate Change Studies Symposium'. Hosted by the Environmental Science Institute, The University of Texas at Austin, Avaya Auditorium in the ACES, Feb. 22, 2010.

'2010 UT Sustainable Business Summit. Panel IV: Sustainable Product Labeling and Marketing'. Hosted by Net Impact McCombs. The University of Texas at Austin, Texas Union Ballroom, Feb. 5, 2010.

'2010 Climate Protection Conference & Expo'. Session topic: 'Taking Green Buildings to Zero Energy, The Next Ten Years'. Hosted by Austin Energy. Palmer Events Center, Austin, Jan. 15, 2010.