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## **Towards circular and energy-efficient management of building stock: an analysis of the residential sector of the Netherlands**

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### **Citation**

Zhang, C. (2021, December 21). *Towards circular and energy-efficient management of building stock: an analysis of the residential sector of the Netherlands*. Retrieved from <https://hdl.handle.net/1887/3247305>

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**Note:** To cite this publication please use the final published version (if applicable).

## List of publications

1. **Zhang, C.**, Hu, M.\*, Dong, L., Xiang, P., Zhang, Q., Wu, J., Li, B., Shi, S. Co-benefits of urban concrete recycling on mitigation of greenhouse gas emissions and land use change: A case in Chongqing metropolis, China. *Journal of Cleaner Production*, 2018, 201, 481–498.
2. **Zhang, C.**, Hu, M.\*, Dong, L.\*\* , Gebremariam, A., Miranda-Xicotencatl, B., Di Maio, F., Tukker, A. Eco-efficiency assessment of technological innovations in high-grade concrete recycling. *Resource, Recovery & Conservation*, 2019, 149, 649–663.
3. **Zhang, C.**, Hu, M.\*, Yang, X., Amati, A., Tukker, A. Life cycle greenhouse gas emission and cost analysis of prefabricated concrete building façade elements. *Journal of Industrial Ecology*, 2020, 24, 1016–1030.
4. **Zhang, C.**, Hu, M.\*, Yang, X., Miranda-Xicotencatl, B., Sprecher, B., Di Maio, F., Zhong, X., Tukker, A. Upgrading construction and demolition waste management from downcycling to recycling in the Netherlands. *Journal of Cleaner Production*, 2020, 266, 121718.
5. **Zhang, C.**, Hu, M.\*, Laclau, B., Garnesson, T., Yang, X., Li, C., Tukker, A. Environmental life cycle costing at the early stage for supporting cost optimization of precast concrete panel for existing building retrofit. *Journal of Building Engineering*, 2021, 35, 102002.
6. **Zhang, C.**, Hu, M.\*, Sprecher, B., Yang, X., Zhong, X., Li, C., Tukker, A. Recycling potential in building energy renovation: a prospective study of the Dutch residential building stock till 2050. *Journal of Cleaner Production*, 2021, 301, 126835.
7. **Zhang, C.**, Hu, M.\*, Laclau, B., Garnesson, T., Yang, X., Tukker, A. Investment-energy-carbon payback period analysis on prefabricated cladding system for building energy renovation: cross-state cases of Spain, the Netherlands, and Sweden. *Renewable and Sustainable Energy Reviews*, 2021, 145, 111077.
8. **Zhang, C.**, Hu, M.\*, Di Maio, F., Sprecher, B., Yang, X., Tukker, A. An overview of waste hierarchy framework for analyzing the circularity of construction and demolition waste management in Europe. *Science of the Total Environment*, 2022, 803, 149892.
9. **Zhang, C.**, Hu, M.\*, Sprecher, B., Yang, X., Verhagen, T., Tukker, A. Towards the 2050 circularity and decarbonization goals: Economic and environmental

- implication of integrated material-energy efficiency renovation of residential building stock in the Netherlands. (In review)
10. Li, B., Xiang, P.\*, Hu, M., **Zhang, C.**, Dong, L. The vulnerability of industrial symbiosis: a case study of Qijiang Industrial Park, China. *Journal of Cleaner Production*, 2017, 157, 267-277.
  11. Yang, X.\*, Hu, M., Heeren, N., **Zhang, C.**, Verhagen, T., Tukker, A. A combined GIS-archetype approach to model residential space heating energy: A case study for the Netherlands including validation. *Applied Energy*, 2020, 280, 115953.
  12. Yang, X.\*, Hu, M., Tukker, A., **Zhang, C.**, Huo, T., Steubing, B. A bottom-up dynamic building stock model for residential energy transition : A case study for the Netherlands. *Applied Energy*, 2022, 206, 118060.
  13. Zhong, X.\*, Hu, M., Deetman, S., Steubing, B., Lin, H., Aguilar-Hernandez, G., Harpprecht, C., **Zhang, C.**, Tukker, A., Behrens, P. Global greenhouse gas emissions from housing materials and mitigation strategies to 2060. **Nature communications**, 2021, 12(1), 6126.

## Conference/Forum

1. **Chunbo Zhang**, Hu Mingming. Study on the mechanism of public-private partnership for concrete recycling. Chinese Sand & Rock Aggregate Industry Technological Innovation Conference. Chongqing, 28-29, June, 2016. Oral presentation
2. **Chunbo Zhang**, Mingming Hu. Study on benefits of concrete recycling on carbon emissions and land use reduction, with case in Chongqing, China. ISIE-ISSST 2017: Science in Support of Sustainable and Resilient Communities. Chicago, 25-29, June, 2017. Oral presentation
3. **Chunbo Zhang**, Mingming Hu. Life cycle costing on emerging technology for high quality recycling of concrete in Europe: from lab-scale to industrial-scale. 2018 International Workshop on Environmental Management, Science and Engineering. Fujian, 16-17, June, 2018. Oral presentation
4. **Chunbo Zhang**, Mingming Hu. Life cycle costing of construction and demolition waste recycling for cost effective building retrofits -- A case study in the Netherlands. International Conference on Resource Sustainability. Beijing, 27-29, June, 2018. Oral presentation
5. **Chunbo Zhang**, Mingming Hu. Eco-efficiency analysis of technological innovations in high-grade concrete recycling in Europe. ISIE 2019 10th International Conference on Industrial Ecology, Beijing, 7-11, July, 2019. Oral presentation
6. **Chunbo Zhang**, Mingming Hu. Construction and demolition waste use and the situation in Asia: case of China. Virtual Conference: Promoting circular economy for buildings: the experience of VEEP, ICEBERG, SeRaMCo projects (organized by the EU Build Up), 9-10, March, 2021. Oral presentation

## Acknowledgements

Upon the completion of this thesis, I feel excited to step to a new stage of my life, in the meanwhile, I also know I am about to leave the Netherlands. The past four years in the Netherlands are the most unforgettable experience in my life. First and foremost, I am deeply grateful to my esteemed supervisor Dr. Mingming Hu and my promotor Prof. Arnold Tukker for their patient guidance and invaluable advice for my doctoral project. Their plentiful knowledge and immense experience have inspired me in all the time of my academic and daily life.

I had quite some opportunities to communicate with and learn from my friends and colleagues at the Institute of Environmental Sciences (CML). I am grateful to my co-researchers and -authors: Benjamin Sprecher, Liang Dong, Xining Yang, Xiaoyang Zhong, Chen Li, Brenda Miranda-Xicotencatl, Teun Verhagen for their contributions to my projects. I would like to extend my sincere thanks to Dr. Gjalt Huppel and Dr. Jeroen Guinée for their insightful comments on my studies. The assistance provided by Dr. Ester van der Voet, Dr. Rene Kleijn, Dr. Reinout Heijungs, and Prof. Jan Boersema were also greatly appreciated. I had great pleasure working with my officemates Rosaleen March, Jolanda Luksenburg, Yuan Qian, Maarten Schrama, Yingji Pan. I am grateful to my colleagues at CML: Ranran Wang, Bernhard Steubing, Pual Behrens, Stefano Cucurachi, Laura Scherer, José Mogollón, Arjan de Koning, Flora Siebler, Roy Remme, Valerio Barbarossa, Joris Timmermans, Emily Strange, Ellen Cieraad, Tomer Fisherman, Lauran van Oers, Jing Huang, Natalya Tsoy, Carlos Blanco Rocha, Elizabeth Migoni Alejandre, Hale Cetinay Iyicil, Sebastiaan Deetman, Georgios Pallas, Bertram de Boer, Francis Longory Lesilau, Nuno De Mesquita César, Franco Donati, Sander van Nielen, Carlos Siguenza Sanchez, Susan van den Brink, Dirk-Jan Kok, Tales Yamamoto, Anne Uilhoorn, Anugrah Anugrah Aditya Budiarsa, Zhongxiao Sun, Di Dong, Juan Wang, Rong Yuan, Juan Wu, Qi Yu, Liangcheng Ye, Yujia Zhai, Milagros Barcelo, Zhijie Li, Jianhong Zhou, Chen Tang, Beilun Zhao, Wen Wen, Kaixuan Pan, Yi Jin, Chengjian Xu, Chengguang Gao, Jinhui Zhou, Janneke van Oorschot, Yanan Liang, Zhenyang Chen, Qi Chen, Marc van der Meide, Mike Sloodweg, Levon Amatuni, Kai Li, Baoxiao Liu, and many others at CML, for the scientific exchanges and practical supports at every stage of my PhD research project. I would like to set aside to thank the CML basketball group: Glenn Aguilar Hernandez, Leon Hauser, Guiyin Wang, Yuchao Song, Riccardo Mancinelli, Daniel Arenas Lago, and so on for having made my leisure life in the Netherlands a wonderful time. Thanks should also go to the supporting team of CML: Paul de Hoog, Susanna van den Oever, Sammy Koning, Esther Philips-Volriet, Joyce Glerum, Kiki Boomgaard, Jasper Williams, Daniel de Koning, Maarten van't Zelfde, and others for their kind support and helps.

Thanks to the China Scholarship Council and EU H2020 Project VEEP for the financial support of my PhD project. I am also grateful for the technical support from those VEEP partners. They are: Dr. Francesco Di Maio, Dr. Abraham Teklay Gebremariam, Dr. Anna Paraboschi, Arianna Amati, Alessio Rimoldi, Benjamin Laclau, Eric van Roekel, Dr. Francisco Ruiz, Frank Rens, Ismo Tiihonen, Dr. Jaime Moreno Juez, Michelle Giordano, Dr. Raul Pina Zapardiel, Thomas Garnesson, Zuzana Taťáková and so on.

I would like to thank my doctoral committee: Prof. dr. H. X. Lin, Prof. dr. M. G. Vijver, Prof. dr. B. Zhu, Prof. H. Brattebø, Dr. E. van der Voet, and Dr. T. Fishman for reading this thesis and providing valuable comments.

I also would like to express a special thankfulness to Prof. Liya Rong (Perking University) for her continuous support and inspiration. I would like to express my sincere gratitude to my buddy Magic Yang (University of Southern Denmark) for the moral encouragement and technical assistance throughout my high school life to my doctoral study. I cannot leave my girlfriend Vivian without mentioning, who accompanied me during my life in the Netherlands.

My deepest gratefulness is always due to my parents. I could not have gone this far without their unconditional love and unmeasurable support.

## Curriculum vitae

Chunbo Zhang was born on 13th April 1992, in Changshou, Chongqing. From 2007 to 2010, he attended Chongqing No.7 High School. From 2010-2014 he majored in Construction Management at Chongqing Jiaotong University and graduated with a Bachelor's degree. From 2014 to 2017, he obtained his Master's Degree in major of Management Science and Engineering at Chongqing University. After his Master study, he was awarded a scholarship by the China Scholarship Council to pursue a PhD study at the Institute of Environmental Sciences (CML) at Leiden University in 2017. At CML, his PhD project focused on the integration of material flow analysis and life cycle sustainability assessment to investigate the environmental and economic impact of material circularity and energy efficiency interventions for a sustainable built environment in the Netherlands.