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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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## 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

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### 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.