Wei Li

Address: De Boelelaan 1105, 1081 HV Amsterdam, the Netherlands **Date of Birth:** 02/06/1996

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EDUCATION

09/2021-present **PhD in Economics**
Vrije Universiteit Amsterdam, the Netherlands
Thesis Topic: "The Water-Energy-Food Nexus in Beijing-Tianjin-Hebei Region of China"
Supervisors:

Philip Ward	Lia van Wesenbeeck
Institute for Environmental Studies,	School of Business and Economics,
Vrije Universiteit Amsterdam;	Amsterdam Centre for World Food Studies,
Deltares	Vrije Universiteit Amsterdam
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09/2021-present **Research Associate**
Amsterdam Centre for World Food Studies, the Netherlands

09/2018-07/2021 **MSc in Management**
Outstanding graduate, Renmin University of China, China (GPA: 3.89/4, rank 1/53)
Supervisor:
Xiaohui Tian
School of Agriculture Economics and Rural Development, Renmin University of China
tianxiaohui@ruc.edu.cn

09/2014-07/2018 **BSc in Management**
Outstanding graduate, Northwest Agricultural & Forestry University, China (GPA: 3.78/4, rank 1/67)

07/2016-08/2016 **Study Abroad Program** on Agricultural operations and natural resource management in the US Midwest
Michigan State University, United States of America

RESEARCH FIELDS

Water-Energy-Food Nexus, Environmental Economics, Agricultural Economics, and Applied Econometrics

WORKING PAPERS

Li, W.*, Ward, P. J., & Wesenbeeck, L. V., Towards an Ideal Theoretical Model for the Water-Energy-Food Nexus, plan to submit to *Journal of Environmental Economics and Management, 2025*

Abstract: We innovatively identify six key objectives that an ideal theoretical model for the water-energy-food (WEF) nexus should simultaneously achieve: ensuring resource security; promoting resource circularity; enabling transferability across spatial and temporal scales and geographic scopes; facilitating comprehensive identification of resource interactions; integrating economic, environmental, and societal considerations; and ensuring solvability in empirical applications. It seems that none of the existing theoretical models for the WEF nexus fully achieve all these objectives. To bridge this gap, we develop a pioneering theoretical WEF model based on an established regional water economy the Jordan River Basin. Our model advances the state of the art by fully addressing the six objectives while making three key contributions: (1) a comprehensive water quality assessment, accounting for soluble and insoluble pollutants as well as water temperature; (2) the integration of farm animal welfare, shifting from an anthropocentric to an eco-centric perspective in resource governance; and (3) full transparency in consolidating all underlying resource interactions within a generalized resource balance model. By bridging critical gaps between theoretical frameworks and empirical applications, our model addresses the notable scarcity of theoretical modelling in the WEF nexus and lays the groundwork for future investigations into the human-nature interactions in the Anthropocene. Its transparency and flexibility renders it a practical tool for scenario simulations and policy design in diverse domains, including animal welfare, climate change, emerging technologies, and human health.

Keywords: Water-energy-food nexus; Resource interaction; Theoretical model; Resource economics; Resource circularity

PUBLICATIONS

Li, W.*, Ward, P. J., & Wesenbeeck, L. V. (2025). A critical review of quantifying water-energy-food nexus interactions. Renewable and Sustainable Energy Reviews, 211, Article 115280. https://doi.org/10.1016/j.rser.2024.115280

Abstract: The water-energy-food (WEF) nexus exemplifies the holistic, integrated, and interdisciplinary system approach, emphasizing mutual interactions between water, energy, and food resources. This study presents the first systematic review that critically evaluates the past progress of WEF nexus research from the evidence-based lens of resource interactions, in terms of quantifying the types and the number of interactions studied. Using a novel classification, this review first classifies 834 WEF nexus interaction studies into four classes based on two axes: (1) The type of study (theoretical or empirical) and (2) The extent of resource interactions examined (all six interactions as a 'full' WEF nexus study or fewer interactions as a 'partial' WEF nexus study). Despite the proliferation of WEF nexus studies since 2011, no significant progress has been made towards including more resource interactions over time in either theoretical studies or empirical applications. Moreover, this review shows that: the number of resource interactions examined in empirical applications is much lower than in theoretical studies; the study of physical resource interactions remains dominant; environmental considerations are biased towards water quality and carbon emissions; and there is a misalignment between research questions and empirical methodologies. Further, this review identifies future directions and provides concrete recommendations for aligning future research to jointly achieve Sustainable Development Goals (SDGs) 2, 6, and 7.

Highlights

- No evident increase in the number of resource interactions studied over time.
- Theoretical studies include more resource interactions than empirical applications.
- The study of physical resource interactions remains dominant.
- There is a misalignment between research questions and empirical methodologies.

Keywords: Water-energy-food (WEF) nexus; Resource interaction; Nexus theory; Nexus application; System approach; Sustainable development goals (SDGs)

Tian, X. (MSc supervisor), **Li, W.**, & Li, R.*(2021). The environmental effects of agricultural mechanization: Evidence from agricultural machinery purchase subsidy policy. *Chinese Rural Economy* (中国农村经济), 2021(9), 95-109. (The No. 1 journal in Agricultural Economics in China, featuring full text in Chinese with an English abstract)

Abstract: Based on China's agricultural production data at the county level and satellite remote sensing data, from the perspective of the implementation of the agricultural machinery purchase subsidy policy, this article takes the quasi-natural experimental characteristics of the policy as exogenous shocks of agricultural mechanization and uses the Difference-in-differences (DID) approach to measure the impacts of agricultural machinery purchase subsidy policy on polluting agricultural production behaviors and its mechanisms. The results show that the agricultural machinery purchase subsidy policy has significantly improved the level of agricultural mechanization, and the impacts of the policy on polluting agricultural production behaviors are different and with a certain lag. Specifically, the policy has significantly reduced the use of plastic film in the current year and the next year and increased the number of straw-burning points in the next year after the policy started but had no significant impacts on the use of chemical fertilizer and pesticide. The mechanism analysis shows that the policy has changed the way farmers used polluting inputs and treated agricultural production waste by expanding the proportion of grain sown area and promoting the outflow of agricultural labor force, which has a corresponding impact on the ecological environment.

Keywords: Agricultural Mechanization; Production Behavior; Crop Structure; Labor Mobility; Difference-in-differences

PROJECT EXPERIENCES

01/2023-09/2023 **Project:** Comprehensive Treatment and Control Strategy of Groundwater Overexploitation
Founder: Peking university, Renmin university of China, and Ministry of Science and Technology of the People's Republic of China
- Coordinated with local village cadres as one of team leaders
- Participated in the household survey of seven villages in Hebei Province, China

01/2019-02/2021 **Project:** Short-term Forecast and Analysis of Agricultural Product Market Prices
Founder: Ministry of Agriculture and Rural Affairs of the People's Republic of China
- Used the time series model to forecast the major agricultural products' price in China
- Developed the Self-adaptable Short-term Agricultural Prices Prediction System (SSAPP)
- Wrote four semi-annual reports
- The report of the first half of 2020 was approved by the Deputy Secretary-General of the National Development and Reform Commission of China

02/2019-01/2020 **Project:** Evaluation of Agricultural Modernization Level of National Modern Agricultural Demonstration Zone
Founder: Ministry of Agriculture and Rural Affairs of the People's Republic of China
- Participated in household survey, enterprise interview, government discussion in Shanghai, Jiangsu province and Anhui province of China
- Calculated the agricultural modernization scores at county level based on 25 specific indicators covering six aspects
- Drafted three comprehensive evaluation reports

AWARDS AND GRANTS

07/2022-07/2025 Erasmus+ Mobility Grant-KA171, European Commission

09/2021-08/2025 Government-sponsored Oversea Education, China Scholarship Council

09/2020 Excellent Paper in the 4th *Agriculture, Rural Areas and Farmers Forum*, Editorial departments of *China Rural Economy* & *China Rural Observation*

06/2018 Honor Thesis in Management, Northwest Agriculture & Forestry University, China (awarded to top 100 theses from the whole university)

11/2017 National Outstanding Forestry Graduates in China, Chinese Society of Forestry Education & National Forestry and Grassland Administration, China (awarded to top 40 graduates nationwide)

11/2017 National Scholarship, Ministry of Education, China (awarded to the top 3%)

11/2016 National Scholarship, Ministry of Education, China (awarded to the top 3%)

TEACHING & SUPERVISING EXPERIENCES

02/2025-05/2025 *Advanced Macroeconomics* (Undergraduate Course), Amsterdam University College, ,
02/2024-05/2024 teaching assistant for Professor Lia van Wesenbeeck

04/2023-07/2023 *Bachelor Thesis Supervision*, student: Janina Krupski, thesis title: *China's Pilot Free Trade Zones: The Solution to Avoiding the Middle-Income Trap?*

02/2023-03/2023 *Macroeconomics I* (Undergraduate Course), Vrije Universiteit Amsterdam, teaching assistant for Professor B.A. Bruegemann

09/2022-10/2022 *Economics Challenges* (Undergraduate Course), Vrije Universiteit Amsterdam, teaching assistant for Professor Roland Iwan Luttens

03/2021-08/2021 *Principles of Economics* (Undergraduate Course), Renmin University of China, teaching assistant for Professor Xiaohui Tian

SKILLS

Computer Skills: ArcGIS, STATA, R, Python, SPSS, Eviews

Languages: Chinese (Native), English (Proficient), Dutch (A2)