

# Patrick S. Ward, Ph.D.

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Assistant Professor of Environmental Economics and Policy

[Master of Environmental Policy \(iMEP\) Program](#)

[Duke Kunshan University](#)

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## Research Interests:

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Agricultural development, agricultural and food policy, natural resource management, risk and uncertainty, environmental economics, environmental policy, technology adoption, behavioral economics, production economics, information economics.

## Education:

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Ph.D. Agricultural Economics, Purdue University (2011).

M.A. Economics, Indiana University (2007).

B.S. Financial Counseling and Planning, Purdue University (2002).

## Affiliations:

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### **Duke Kunshan University, Kunshan, Jiangsu Province, China**

*Assistant Professor of Environmental Economics and Policy: 2018–present*

*Director of Graduate Studies, Master of Environmental Policy graduate program: 2020–present*

*Acting Director, Master of Environmental Policy graduate program: 2021–present*

*Affiliate, Environmental Research Center: 2018–present*

### **International Food Policy Research Institute, New Delhi, India (2012–2016); Washington, DC (2016–present)**

*Non-resident Fellow, Development Strategy and Governance Division: 2021*

*Non-resident Fellow, Environment and Production Technology Division: 2020*

*Research Fellow I/II, Environment and Production Technology Division: 2014–2018*

*Postdoctoral Fellow/Associate Research Fellow, Environment and Production Technology Division: 2012–2014*

**International Center for Climate Governance, Venice, Italy***Postdoctoral Visiting Researcher: 2011–2012***Research:**

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**Publications****Refereed journals**

1. **Ward, Patrick S.**, Lawrence Mapemba, and Andrew R. Bell “[Smart subsidies for sustainable soils: Evidence from a randomized controlled trial in southern Malawi](#),” forthcoming at *Journal of Environmental Economics and Management*.
2. Ortega, David L., Wen Lin, and **Patrick S. Ward** (2022). “[Consumer acceptance of gene edited food products in China](#),” *Food Quality and Preference* 95: 104374.
3. Bell, Andrew R., Kathryn Grace, Ehsanul Haque Tamal, Mari Alexandria Roberts, Alex Morgan, Mary Killilea, and **Patrick S. Ward**. “[How high frequency food diaries can transform understanding of food security](#),” *Environmental Research Letters* 16(4): 041002.
4. Ghosh, Ranjan Kumar, Shweta Gupta, Vartika Singh, and **Patrick S. Ward** (2021). “[Demand for crop insurance in developing countries: Fresh evidence from India](#),” *Journal of Agricultural Economics* 72(1): 293–320; [Corresponding author]
5. **Ward, Patrick S.**, Shweta Gupta, Vartika Singh, David L. Ortega, and Shriniwas Gautam (2020). “[What is the intrinsic value of fertilizer? Experimental value elicitation and decomposition in the hill and terai regions of Nepal](#),” *Food Policy* 20: 101809.
6. Bell, Andrew R., **Patrick S. Ward**, Muhammad Ashfaq, and Stephen Davies (2020). “[Valuation and aspirations for drip irrigation in Punjab, Pakistan](#),” *Journal of Water Resources Planning and Management* 146(6): 04020035; [Corresponding author].
7. **Ward, Patrick S.**, Simrin Makhija, and David J. Spielman (2020). “[Drought-tolerant rice, weather index insurance, and comprehensive risk management for smallholders: Evidence from a multi-year field experiment in India](#),” *Australian Journal of Agricultural and Resource Economics* 64(2): 421–454.
8. **Ward, Patrick S.**, David L. Ortega, David J. Spielman, Neha Kumar, Sumedha Minocha (2020). “[Demand for complementary financial and technological tools for managing drought risk](#),” *Economic Development and Cultural Change*, 68(2): 607-653.
9. Gars, Jared, and **Patrick S. Ward** (2019). “[Can differences in individual learning explain patterns of technology adoption? Evidence on heterogeneous learning patterns and hybrid rice adoption in Bihar, India](#),” *World Development* 115:178–189; [Corresponding author].
10. Hill, Ruth Vargas, Neha Kumar, Simrin Makhija, Nicholas Magnan, Francesca de Nicola, David J. Spielman, and **Patrick S. Ward** (2019). “[Ex ante and ex post effects of hybrid index insurance in Bangladesh](#),” *Journal of Development Economics* 136:1–17; [Corresponding author].

11. Ortega, David L., **Patrick S. Ward**, and Vincenzina Caputo (2019). “Evaluating producer preferences and information processing strategies for drought risk management tools in Bangladesh,” *World Development Perspectives* 15: 100132.
12. Tamal, Md. Ehsanul Haque, Andrew R. Bell, Mary Killilea, and **Patrick S. Ward** (2019). “Social dynamics of short term variability in key measures of household and community wellbeing in Bangladesh,” *Nature: Scientific Data* 6: 125.
13. Bell, Andrew R., **Patrick S. Ward**, Mary E. Killilea, and Md. Ehsanul Haque Tamal (2019). “Assessing recall bias and measurement error in high-frequency social data collection for human-environment research,” *Population and Environment* 40(3): 325–345.
14. Arora, Anchal, Sangeeta Bansal, and **Patrick S. Ward** (2019). “Do farmers value rice varieties tolerant to droughts and floods? Evidence from a discrete choice experiment in Odisha, India,” *Water Resources and Economics* 25: 27–41.
15. Bell, Andrew, Tim Benton, Klaus Droppelmann, Lawrence Mapemba, Oliver Pierson, and **Patrick S. Ward** (2018). “Transformative change through Payments for Ecosystem Services (PES): A conceptual framework and application to conservation agriculture in Malawi,” *Global Sustainability* 1 (e4): 1–8.
16. Bell, Andrew R., **Patrick S. Ward**, Lawrence Mapemba, Zephaniah Nyirenda, Wupe Msukwa, and Edwin Menamu (2018). “Smart Subsidies for Catchment Conservation in Malawi,” *Nature: Scientific Data* 5, article 180113.
17. **Ward, Patrick S.** and Simrin Makhija (2018). “New modalities for managing drought risk in rainfed agriculture: Evidence from a discrete choice experiment in Odisha, India,” *World Development* 107:163–175.
18. Bell, Andrew R., Jennifer Zavaleta Cheek, Frazer Mataya, and **Patrick S. Ward** (2018). “Do as they did: peer effects explain adoption of conservation agriculture in Malawi,” *Water* 10(51):1-16.
19. **Ward, Patrick S.**, Andrew R. Bell, Klaus Droppelmann, and Tim Benton (2018). “Early adoption of conservation agriculture practices: Understanding partial compliance in programs with multiple adoption decisions,” *Land Use Policy* 70: 27–37.
20. Spielman, David J., **Patrick S. Ward**, Deepthi E. Kolady, and Harun-Ar-Rashid (2017). “Public incentives, private investment, and outlooks for hybrid rice in Bangladesh and India,” *Applied Economics and Policy Perspectives* 39(1): 154–176.
21. **Ward, Patrick S.** and Gerald E. Shively (2017). “Disaster risk, social vulnerability and economic development,” *Disasters* 41(2): 324–351.
22. Bell, Andrew Reid, **Patrick S. Ward**, Mary E. Killilea, and Md. Ehsanul Haque Tamal (2016). “Real-time social data collection in rural Bangladesh via a ‘microtasks for micropayment’ platform on Android smartphones,” *PLoS ONE* 11(11): e0165924.
23. **Ward, Patrick S.** (2016). “Transient poverty, poverty dynamics and vulnerability to poverty: An empirical analysis using a balanced panel from rural China,” *World Development* 78: 541–553.

24. **Ward, Patrick S.**, Andrew R. Bell, Gregory M. Parkhurst, Klaus Droppelmann, and Lawrence Mapemba (2016). “[Heterogeneous preferences and the effects of incentives in promoting conservation agriculture in Malawi](#),” *Agriculture, Ecosystems & Environment* 222: 67–79.
25. Ortega, David L. and **Patrick S. Ward** (2016). “[Information processing strategies and the effects of framing in developing country choice experiments: Results from rice farmers in India](#),” *Agricultural Economics* 47: 493–504.
26. Bell, Andrew R., **Patrick S. Ward**, and Md. Azeem Ali Shah (2016). “[Increased water charges improve efficiency and equity in an irrigation system](#),” *Ecology and Society* 21(3): 23.
27. **Ward, Patrick S.** and Vartika Singh (2015). “[Using field experiments to elicit risk and ambiguity preferences: Behavioral factors and the adoption of new agricultural technologies](#),” *Journal of Development Studies* 51(6): 707–724.
28. **Ward, Patrick S.** and Valerien O. Pede (2015). “[Capturing social network effects in technology adoption: The spatial diffusion of hybrid rice in Bangladesh](#),” *Australian Journal of Agricultural and Resource Economics* 59(2): 225–241.
29. **Ward, Patrick S.** and Gerald E. Shively (2015). “[Migration and land rental as responses to income shocks in rural China](#),” *Pacific Economic Review*, 20(4): 511–543.
30. Bell, Andrew Reid, M. Azeem Ali Shah and **Patrick S. Ward** (2014). “[Reimagining cost recovery in Pakistan’s irrigation system through willingness-to-pay estimates for irrigation water from a discrete choice experiment](#),” *Water Resources Research* 50(8): 6679–6695.
31. **Ward, Patrick S.**, David L. Ortega, David J. Spielman, and Vartika Singh (2014). “[Heterogeneous preferences for drought-tolerant rice: Evidence from Bihar, India](#),” *World Development* 64: 125–139.
32. **Ward, Patrick** (2014). “[Measuring the level and inequality of wealth: An application to China](#),” *Review of Income and Wealth* 60(4): 613–635.
33. **Ward, Patrick S.**, Raymond J.G.M. Florax and Alfonso Flores-Lagunes (2014). “[Climate change and agricultural productivity in Sub-Saharan Africa: A spatial sample selection model](#),” *European Review of Agricultural Economics* 41(2): 199–226.
34. Spielman, David J., Deepthi E. Kolady and **Patrick S. Ward** (2013). “[The prospects for hybrid rice in India](#),” *Food Security* 5(5): 651–665.
35. **Ward, Patrick** (2013). “[On the use of tradable development rights for reducing flood risk](#),” *Land Use Policy* 31: 576–583.
36. **Ward, Patrick** and Gerald Shively (2012). “[Vulnerability, income growth and climate change](#),” *World Development* 40(5): 916–927.

#### Under review at refereed journals

1. Wu, Tianqi, **Patrick S. Ward**, and Binbin Li. “Experimental evidence on cooperation in ecological protection in China.” *Under review*.
2. Gars, Jared, Ram Fishman, Avinash Kishore, Yoav Rothler, and **Patrick S. Ward**. “Confidence and information usage: Evidence from soil testing in Bihar, India.” *Submitted*.

### Manuscripts under preparation for submission to refereed journals

1. **Ward, Patrick S.**, Muzna Alvi, Simrin Makhija, and David J. Spielman. “Cooperation and the provision of local public goods in remote rural communities.”
2. Gulati, Kajal, **Patrick S. Ward**, Travis J. Lybbert, and David J. Spielman. “Intrahousehold preference heterogeneity and demand for labor-saving technology: The case of mechanical rice transplanters in India.”
3. Sun, Jiayu, **Patrick S. Ward**, and Junjie Zhang. “Lockdown, location, and learning: The effects of COVID-19 on students’ academic performance.”
4. Alvi, Muzna, **Patrick S. Ward**, Simrin Makhija, and David J. Spielman. “Does identity affect aspirations in rural areas? An examination from the lens of caste and gender.”
5. Alvi, Muzna, **Patrick S. Ward**, Simrin Makhija, and David J. Spielman. “Do grassroots interventions relax behavioral constraints to the adoption of nutrition-sensitive food production systems?”
6. Kramer, Berber, Subhransu Pattnaik, and **Patrick S. Ward**. “Gender, demand for agricultural credit and technology: Survey evidence from Odisha.”
7. **Ward, Patrick S.**, Gui Xian [Suzanne] Ong, and Han Ding. “Air quality and preferences for outdoor activities.”
8. Ndegwa, Michael K., Apurba Shee, **Patrick S. Ward**, Yanyan Liu, Calum Turvey, and Liangzhi You. “The impact of risk contingent credit (RCC) and traditional credit on smallholders’ agricultural investment, productivity, and welfare: Experimental evidence from a randomized control trial in rural Kenya.”

### Research in progress

1. “KhetScore: A cluster randomized trial on the impacts of using digital technologies to unlock risk-contingent credit for marginal farmers in Odisha” (with Berber Kramer).
2. “Bundling technology with insurance: Evidence from a randomized evaluation in Odisha, India.
3. “Environmental impacts of crop insurance: Evidence from a randomized experiment in Bangladesh.”
4. “Remote sensing and detection of heavy metal pollution in soil and water” (with Songjia Zhang).
5. “Long-term effects of the energy transition on human capital accumulation” (with Han Ding).
6. “How misinformation affects public support for policies that reduce pandemic risk” (with Wynona Eurj Curaming)
7. “Estimating the economic value of the Vallee de Mai Nature Reserve, Seychelles” (with Upksha Hettiarachchi)
8. “Effects of solar refrigerators on vaccine storage, doses-administered, and health benefits in Bukavu city of the Democratic Republic of Congo: A quasi-experiment” (with Serge Bakire and Xudong Ren)

9. “Do consumers’ environmental attitudes affect their preferences for product packaging?”  
(with Yingchen Xu)
10. “Household sanitation, water-borne illness, and school attendance” (with Ziyue Wang)

### **Conference, Seminar, and Webinar Presentations (2019 - present):**

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“Confidence and information usage: Evidence from soil testing in India.” Indian Institute of Technology – Tirupati (Tirupati, Andhra Pradesh, India), March 2021 (Invited presentation).

“Confidence and information usage: Evidence from soil testing in India.” Duke Kunshan University Economics Workshop (Kunshan, Jiangsu, China), November 2019 (Invited presentation).

“Confidence and information usage: Evidence from soil testing in India.” Macro Agricultural Research Institute (MARI) Seminar, Huazhong Agricultural University (Wuhan, Hubei, China), October 2019 (Invited presentation).

“Cooperation and the provision of local public goods in remote rural communities.” China Agricultural Economics Review (CAER) - International Food Policy Research Institute (IFPRI) Annual Conference (Hangzhou, Zhejiang, China), October 2019 (Selected presentation).

“Cooperation and the provision of local public goods in remote rural communities.” Agricultural & Applied Economics Association Annual Meeting (Atlanta, GA, USA), July 2019 (Selected presentation).

“Optimizing crop insurance to satisfy the demands of farmers: Evidence from four states in India.” Agricultural & Applied Economics Association Annual Meeting (Atlanta, GA, USA), July 2019 (Selected presentation).

### **Teaching:**

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#### **Duke Kunshan University**

PUBPOL 101: Introduction to Policy Analysis

PUBPOL 631K: Research Methods

PUBPOL 871K: Environmental Policy Analysis

PUBPOL 872K: Environmental Economics and Policy Practicum

ENVIRON 806K: Environmental Economics II

#### **Purdue University**

AGEC 217: Economics

## Graduate student supervision:

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### Duke Kunshan University:

*Master of Environmental Policy (MEP) Master's Project*

Year	Student(s)
2018-2019	Xiaolin Xie
2019-2020	Tianqi Wu Songjia Zhang
2020-2021	Xin (James) Li
2021-2022	Serge Bakire Upeksha Hettiarachchi Xudong Ren Ziyue Wang Yingchen Xu

## Undergraduate student supervision:

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### Duke Kunshan University:

*Signature Work*

Year	Student(s)
2021-2022	Leonardo Barbàra

## Professional Activities:

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### Service

#### ***Editorial Service:***

Associate editor: *China Economic Review*

Review editor: *Frontiers in Environmental Science – Environmental Economics and Management*.

#### ***Review Service:***

*Agricultural Economics, Agricultural and Resource Economics Review, American Journal of Agricultural Economics, Australian Journal of Agricultural and Resource Economics, China Economic Review, Climatic Change, Ecological Economics, European Review of Agricultural Economics, Food Policy, Food Security, HarvestPlus Working Paper Series, Journal of Agricultural Economics, Journal of Development Studies, Journal of Environmental Economics and Management, Journal of Environmental & Policy Planning, Journal of South Asian Development, Land Economics, Land Use Policy, Natural Resources Forum, Population and Environment, Resource and Energy Economics, Review of Income and Wealth, Sustainability, and World Development.*

Agricultural and Applied Economics Association Annual Meetings (2015-present).

International Association of Agricultural Economics Triennial Meetings (2015, 2018).

***Institutional service******Duke Kunshan University:***

Research Policy Committee, Member (2018–2020).  
 Standing Committee on Misconduct in Research, Member (2018–2020).  
 Faculty Council, Member (2018–2020).  
 iMEP Acting Director (2021–present).  
 iMEP Acting Director of Graduate Studies (2020–present).  
 iMEP Admissions Committee (2018–present), Chairperson (2020–present).  
 iMEP Curriculum Committee, Quantitative methods lead (2020–present).  
 iMEP Master’s Project Committee (2020–present).  
 iMEP Duke Semester Committee (2020–present).  
 Environmental Research Center Faculty Steering committee (2021–present).

***International Food Policy Research Institute:***

Workplace Committee, Member (2016–2018).  
 Institutional Review Board (IRB), Member (2016–2018).

***Other professional service:***

Local Organizing Committee–IVth World Conference of the Spatial Econometrics Association (2010).  
 Agricultural and Applied Economics Association (AAEA) Employment Services Committee (2010–2013).  
 Cereal Systems Initiative for South Asia (CSISA) India Management Team and Country Coordinating Committee (2012–2018).

**Association memberships**

Member: American Economic Association (AEA), Agricultural & Applied Economics Association (AAEA), International Association of Agricultural Economists (IAAE), Agricultural Economics Society (AES).

**Honors, Awards, & Fellowships:****Fellowships**

2011–2012: Visiting Research Fellowship, International Center for Climate Governance (ICCG), Venice, Italy.



**Internal and external research awards***Contributor on multi-institutional collaborative research programs*

2015	Cereal Systems Initiative for South Asia (CSISA) Phase III	Bill and Melinda Gates Foundation and US Agency for International Development (USAID)	\$33 million
2015	Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA)	Bill and Melinda Gates Foundation	\$13,464,674

*Principal investigator or investigator*

2021	Duke Kunshan University Global Health Research Center	Faculty supervisor	RMB 30,000
2021	Duke Kunshan University Humanities Research Center Health Humanities Lab	Faculty supervisor	RMB 10,000
2020	International Initiative for Impact Evaluation (3ie)	Co-PI	\$254,022
2019	Center for Effective Global Action'S (CEGA) Digital Credit Observatory (DCO)	Co-PI	\$49,932
2017	International Initiative for Impact Evaluation (3ie)	Co-PI	\$435,708
2014	International Growth Centre (IGC) India Program	Investigator	\$50,000
2013	International Food Policy Research Institute (IFPRI) Strategic Innovations Fund	Co-PI	\$50,000

**Other awards**

Selected Participant–American Enterprise Institute (AEI) Emerging Scholars Workshop in the area of agriculture and food economics, 2015 (Washington, DC).

Selected Participant–Belpasso International Summer School in Environmental and Resource Economics, 2011 (Belpasso, Sicily, Italy).

Recipient of N.J. Yaraswy Memorial Best Paper Award at the 4th International Conference on Applied Econometrics (ICAE-IV) organized by IBS Hyderabad in collaboration with the Indian Econometric Society, 2014.

Committee for the Education of Teaching Assistants (CETA) Excellence in Teaching Award, Purdue University, 2011.

**References:**


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Available upon request