

INSEE LECTURE SERIES

Industrial Wastewater Remediation using Agroforestry

by

Dr. Ram Ranjan
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Chaired By
Prof. Gopal Kadekodi
Past President, INSEE

Industrial effluents and municipal wastewater are increasingly finding their way into freshwater bodies, posing serious health and environmental challenges. In this paper, the potential for industrial wastewater remediation through agroforestry is explored for a peri-urban farming region in India. Farmers are incentivized under a payment for ecosystem services (PES) mechanism to convert their farmlands into poplar-based agroforestry and utilize industrial effluents for irrigating trees. Additional income can be derived through sale of poplar timber which enhances the attractiveness of such a PES mechanism. A dynamic optimization model compares farmers' optimal land use allocation to a socially optimal case. Further, the firm's effluent discharge outcomes are compared to an alternative arrangement where it is fined for discharging untreated wastewater into waterbodies in absence of the agroforestry remediation option. Results support the attractiveness of such PES mechanisms in addressing the industrial effluent discharge problem while simultaneously mitigating the effects of water scarcity through wastewater reclamation. The optimal level of tax required to accomplish complete treatment of effluents by polluting firms is several times higher compared to PES payments. Further, the incentive to convert farmland into poplar plantations improves with PES payments but declines with higher profitability of agricultural crops.

About the Speaker



Dr. Ram Ranjan (INSEE life member) is Associate Professor of Resource Economics at Shiv Nadar University. In the past, he has worked with Macquarie University and CSIRO in Australia, University of Florida, and USDA Economic Research Services at Washington DC. Dr. Ranjan obtained his Masters degree from Delhi School of Economics and PhD from Penn State University in Resource Economics. His research interests are in water scarcity management, biodiversity conservation and climate change mitigation and adaptation responses. A unifying theme for his recent work has been managing risks through mitigation and adaptation measures as well as understanding how changes in natural environments create complex feedbacks in inter-linked human, ecological and economic systems.

About the Chair



Professor Gopal K Kadekodi (past President INSEE) is currently Senior Fellow, World Resources Institute, and Advisor, Water and Land Management Institute, Dharwad. Earlier he was Director, Institute for Social and Economic Change, Bangalore (2003-06); Research Professor (1998-2002), and Honorary Professor (2009-2019) at Centre for Multi-Disciplinary Development Research, Dharwad; Professor, Institute for Economic Growth, Delhi (1973-98) and Visiting Professor at Erasmus University during 1981 and 1989 and Technical University, Twente (Holland) in 1984.

Professor Kadekodi holds a Masters degree in Statistics from Indian Statistical Institute, Calcutta and a PhD in Economics from University of Southern California (which was awarded the Thomas Nixon Carver award as the best thesis in Economics in United States in 1973). He has been awarded several prestigious awards including Fulbright Fellow, Woodrow Wilson Fellow, SANDEE Fellow and Rajyotsava award from Government of Karnataka for his contributions in the field of Education and Policy Research. He has made significant contributions in the fields of common property resources, energy, natural resource management and valuation, biodiversity, economic development and governance. He has authored 18 books, over 100 journal articles. He is on the editorial board of several leading journals and has chaired or been member of important committees such as National Tiger Conservation Authority.

Important information

Date: Tuesday, April 27, 2021

Time: 3:30 pm - 5:00 pm

[Zoom Meeting Link](#)

Meeting ID: 990 0561 8891

Passcode: 558318