

# To calculate long-term conservation pay off, factor in people

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This is a village in Wolong, Sichuan Province, China, where many residents are paid for their actions which help with conservation efforts. Credit: Jianguo

Paying people to protect their natural environment is a popular conservation tool around the world – but figure out that return on investment, for both people and nature, is a thorny problem, especially since such efforts typically stretch on for years.

"Short attention-span worlds with long attention-span problems" is how Xiaodong Chen, a former Michigan State University doctoral student now on faculty at the University of North Carolina-Chapel Hill sums it up.

Chen, with his adviser Jianguo "Jack" Liu, director of the MSU Center for Systems Integration and Sustainability (CSIS) and others, have developed a new way to evaluate and model the long-term effectiveness of conservation investments. Their achievement is not only factoring in ecological gains – like, more trees growing – but also putting the actions and reactions of people into the equation.

The paper, *Assessing the Effectiveness of Payments for Ecosystem Services: an Agent-Based Modeling Approach*, appears in this week's online edition of *Ecology and Society*.

The paper examines payments for [ecosystem services](#) – the practice of paying people to perform tasks or engage in practices that aid conservation. The authors examined one of China's most sweeping – the National Forest Conservation Program, in which residents in Wolong Nature Reserve are paid to stop chopping down trees for timber and fuel wood.

Chen explained they tapped into both social data and environmental information to be able to create a computer model to simulate how the policy would fare over many years in a variety of scenarios. Studies documenting results on land cover change and panda habitat dynamics were merged with studies revealing how people were likely to behave if new households were formed or incentives for conservation activities were varied.

"Usually studies are developed in either the social sciences or the natural sciences, and the importance of the other perspectives are not built into

scientific exploration," Chen said. "We were able to develop this kind of simulation because of collaborative interdisciplinary research - by putting people with different backgrounds together."

He also said the model's ability to run scenarios about how policy could work over decades is crucial because many goals of [conservation](#), like restoring wildlife habitat, can take decades. In the meantime, the actions of individuals living in the area can change.

Provided by Michigan State University

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