To be sustainable, China must implement bold innovations

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Complex issues have hampered China's environmental protection efforts, but bold innovations can help it become a global sustainability leader, says a noted Michigan State University environmental scientist.

"China is the most populous country with the fastest growing economy in the world -- everything it does has a big impact," said Jianguo "Jack" Liu, MSU University Distinguished Professor of fisheries and wildlife who holds the Rachel Carson Chair in Sustainability. Liu is internationally known for his work on environmental sustainability and coupled human and natural systems. "Environmental sustainability in China is crucial, not just for China, but for the rest of the world."

Liu traces China's road to sustainability over the past six decades in the April 2 issue of the journal *Science*. The paper is Liu's second in the prestigious journal in three weeks, a distinction held by only a handful of scientists.

"Jack's scholarship in the broad area of coupled human and natural systems is highly significant and cutting edge," said J. Ian Gray, vice president for research and graduate studies. "We highly value his research and his presence at MSU."

While China's environmental path has been rocky, Liu makes the case that strong leadership, including government officials who are evaluated on their efforts to promote environmental sustainability rather than economic performance, can strengthen China's environmental efforts.

"The Chinese government has implemented a number of policies with good intentions, but the results haven't brought the expected benefits," Liu said.

The one-child policy, for example, has slowed population growth by about 300 million people since its implementation in 1979. However, the number of households has increased much faster than the population. China added 125 million households from 1985 to 2000 and there are now fewer people in each household because of more divorces and fewer multigenerational households. More households consume more resources, generate more waste and use resources less efficiently.

"Humans and natural systems are coupled together and have complex reciprocal interactions," Liu explained. "Many socioeconomic and political forces both promote and hinder sustainability. Integrating natural and social science research can help us understand the complexity of the interactions among the forces that affect environmental sustainability so the desired results can be achieved. In addition to scientific research, institutional innovations also are essential for China to achieve sustainability. One idea may be to create government incentives such as tax credits or subsidies to promote multigenerational housing and housing shared by friends and other non-family members and to discourage divorce."

Provided by Michigan State University