The role of spatial analysis in avoiding climate change maladaptation—a systematic review

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As the practice of climate change adaptation has developed rapidly over recent decades, so has the evidence of maladaptation associated with adaptation initiatives, particularly in the form of risk transfer and risk substitution. Increasing our understanding of maladaptation is important so as to avoid negative outcomes of adaptation project implementation. However, as a research topic, maladaptation has received limited attention to date. Previous research has focused on the development of conceptual frameworks that can assist in defining and evaluating maladaptation, which can be applied to adaptation planning processes seeking to avoid maladaptation. However, practical case studies and methods which can assess and evaluate the risk of maladaptation by integrating both spatial and temporal aspects in a simulation tool have not been done to date. This paper aims to fill this gap by exploring the existing knowledge on maladaptation to climate change, and the interaction between land use change, adaptation planning and project design with the purpose of extending our conceptual understanding. We adopted a systematic review method which involved considering several questions including: (a) What are the definitions and categories of maladaptation? (b) What methods and theoretical frameworks exist for the assessment and evaluation of the risks of maladaptation? (c) How have climate-related research communities considered the issues of maladaptation? (d) What are the experimental studies on land use change which could be applied to minimize the risks of maladaptation in the future adaptation planning? We conclude that future research on maladaptation should integrate spatial analysis methods to assist the identification of maladaptation risk at the initial stage of adaptation planning.

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Biography

Chia-Fa Chi is a Doctoral Candidate of the Department of Marine Environment and Engineering in National Sun Yat-sen University, Taiwan. His main research activities are focused on adaptation to climate change in coastal areas. In particular, he is interested in the issues of maladaptive risks. He has received awards of the Graduate Students Study Abroad Program which is sponsored by Taiwan Ministry of Science and Technology and National Sun Yat-sen University, separately.

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