



Lessons learned and future needs for integrative studies

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There is an increasing need to carry out integrative research that spans natural and social science disciplines to address pressing societal needs. Socio-ecological/socio-technical/socio-biological studies are increasing in number and in profile. However, there are unresolved challenges to carrying out deep and broad integrative research. In this paper I will report on my experiences of interdisciplinary research that span narrow interdisciplinary natural science research projects to broader integrative science involving social scientists and policy and operation stakeholders. These include developing quantitative models to support decision making to facilitating problem structuring approaches with groups of stakeholders. I will critically reflect on lessons learned and what I believe is required for more effective broad and deep interdisciplinary science. Integration of soft and hard approaches are vital for combining the social and natural sciences. Increased use of problem structuring methods to ensure a fuller understanding of the situation under study and that the correct questions are being asked and analysed. Excellent facilitation and boundary spanning is critical for qualitative and quantitative modelling of systems. Linking system diagrams/conceptual models with ontologies and controlled vocabularies is increasingly used to enable integration across disciplines. One of the most significant trends is the increasing use of internet based mechanisms to integrate across disciplinary and stakeholder needs.