

Final Progress Report
Sustainability Science Program, Harvard University
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Name: Prateep Kumar Nayak

Research fields:

natural resources and environment commons, political ecology, environmental justice, social-ecological systems

Your degree program, institution and (expected) graduation date:

PhD in Natural Resources and Environmental Management (Interdisciplinary), University of Manitoba, Natural Resources Institute, Canada. Winter 2011 (expected)

Faculty host(s) at Harvard:

William Clark, Belfer Center for Science and International Affairs and Center for International Development, Kennedy School of Government; *Missy Holbrook*, Department of Organismic and Evolutionary Biology

SSP-related research activity:

Title: Sustainability as connectedness: Conceptualizing the human-environment connections in Chilika Lagoon, India

Abstract: The project is based on the notion that disconnect in the relationship between people and their natural surroundings is related to the question of sustainability and this probably is a two way feedback process. It explores how the pursuit of sustainability in resource-based communities is linked to the level of people's connection or disconnection with the resource. The project approaches this by focusing on the multi-level drivers and processes of disconnect of fishing communities in India's Chilika Lagoon, a Ramsar wetland site and the largest brackish water lagoon in Asia, from the resource-base to determine implications of such disconnect for social-ecological sustainability. It considers that the key question is not sustainability per say but the challenge of keeping people connected or reconnecting them to the resource-base. How do we achieve this? The project theorizes that (a) livelihood analysis is central to this connection, (b) resource access, entitlements and control of people over their environment are essential determinants, (c) attention to issues of power, equity and justice offers key foundation, and (d) a promising approach is community-based management with attention to institutions, linkages and partnerships. Elements from a set of four conceptual areas – social-ecological systems, political ecology, environmental justice, and commons governance – along with empirical data collected through my two year long (2007 – 2009) doctoral fieldwork in Chilika is used to analyze sustainability in the context of human-environmental systems. The project uses existing frameworks to explain 'what holds humans and environment together' with specific reference to resource dependant poor in coastal and lagoon environments, both in Chilika as well as elsewhere. Such an analysis holds promise for the understanding of sustainability.

Changes in the project scope - As work progressed on the fellowship the scope of the project was expanded to include a range of coastal lagoons across seven different countries in the analysis instead of only one as originally proposed.

Identification of the problem you address:

What combination of variables can lead to relatively sustainable and productive use of particular resource systems operating at specific temporal and spatial scales and which combination tends to lead to resource collapses and high costs for humanity? This problem is being addressed specifically in the context of coastal lagoons as complex human-environment systems.

Key question asked about the problem:

The project tries to address the following three objectives -

1. Creating a suite of variables that characterize the past and current state of complex lagoon social-ecological systems.
2. Organize an analysis of how attributes of the lagoon social-ecological system jointly affect and are indirectly affected, externally by socioeconomic, political, and ecological drivers at multiple scales, and internally by interactions and resulting outcomes at particular time and place.
3. Discuss implications of this analysis for sustainability of complex lagoon social-ecological systems and suggesting possible governance arrangements to address this.

The methods by which you answered that question:

Diagnostic approaches for going beyond panaceas (Ostrom 2007) is being used for analysis as it provides a nested framework for understanding interactions and outcomes of linked social-ecological systems. Qualitative and quantitative methods are being combined with both primary and secondary research data. Cross-cultural and cross-country cases involving a number of coastal lagoons have been included into the project in order to provide a context to the analysis.

Principle literature upon which the research drew:

The research depends largely on literature and theoretical perspectives from commons, governance with particular attention to interactive governance theory, complex systems and social-ecological systems analysis, and sustainability science. It also includes large numbers of published literature spanning scientific research papers to socioeconomic analysis of the selected lagoon cases.

Empirical data acquisition description:

Research data were collected from two main sources: 1) primary research data were collected in Chilika lagoon of India over a period of 28 months (as part of my doctoral research work) during 2007 - 2009; 2) secondary research data were gathered for seven other lagoon cases around the world through literature review.

Geographical region studied:

Primary research was undertaken in India, and secondary literature review included Sri Lanka, Vietnam, Lithuania, Italy, South Africa, Brazil and the United States.

Recommendations that might be relevant for your problem:

Currently work is in progress and it is too early to make any specific recommendation. However, the final document may have some key learning highlighted.

A description of the final product(s) you have/are aiming to produce:

The aim is to first publish a working paper in the 'CID Research Fellow and Graduate Student Working Paper Series' following which a revised version of the paper could be appropriate for submission to the Proceedings

of the National Academy of Sciences (PNAS) or another suitable journal. A decision on this will be taken at a later date in consultation with my faculty hosts.

Description of other major intellectual or professional advancement activity over the past academic year:

Published work

Nayak, P. K. and F. Berkes. 2010. Whose marginalisation? Politics around environmental injustices in India's Chilika Lagoon. *Local Environment* 15 (6): 553–567.

Robson, J. P. and P. K. Nayak. 2010. Rural out-migration and resource dependent communities: Lessons from Mexico and India. *Population and Environment* (accepted)

Nayak, P. K. and F. Berkes. 2010. Commonisation and decommissioning: Understanding the processes of change in Chilika Lagoon, India. *Conservation and Society* (under review).

Work in progress

Community-based management and social Justice in Chilika lagoon, India. Doctoral dissertation (Expected winter 2011).

Robson, J. P. and P. K. Nayak. Commons in an era of increasing deterritorialization: Evidences from Mexico and India. Under preparation for submission to *International Journal of Commons*.

Nayak, P. K. and S. Coulthard. Lagoon systems as platforms for sharing knowledge: Social-ecological responses to reduced access to commons, and dynamic environmental changes (Under preparation).

Robson, J. P. and P. K. Nayak. Transforming ways of life: How out-migration affects changes in resource dependent societies (Under preparation).

Coulthard, S. and P. K. Nayak. A tale of two lagoons: Shaping of resilience and implications for human wellbeing in coastal India (Under preparation).

Conference panels (accepted)

Between the Sea and the Land: Complex Commons at the Interface of Marine-Terrestrial Systems. Special plenary session, with Elinor Ostrom as the chair, at the 13th Biennial Conference of the International Association for the Study of the Commons, Hyderabad, India, January 2011. Organizer - Prateep Kumar Nayak.

Small-scale fisheries and fishers in the context of coastal lagoons. Special panel at the First World Small-scale Fisheries Congress, Bangkok, Thailand, October 2010. Co-organized with Sarah Coulthard, University of Ulster, UK.

Rural out-migration and resource dependent communities in a globalized world. Panel at the 13th Biennial Conference of the International Association for the Study of the Commons, Hyderabad, India, January 2011. Co-organized with James Patrick Robson, University of Manitoba, Canada.

Coastal Lagoons as complex human-environment systems: Implications for Sustainability. Panel at the 13th Biennial Conference of the International Association for the Study of the Commons, Hyderabad, India, January 2011. Co-organized with Sarah Coulthard, University of Ulster, UK.

Workshop and conference presentations

Panel member on the topic 'Protected Areas and Sustainable Development'. Harvard 16th Annual International Development Conference on 'Insights, leadership, and innovation: Charting new frontiers' at Kennedy School of Government, Boston, April 2010.

Creative Resilience: Managing Uncertainty, Change and Renewal in Complex Human-Environmental Systems. Trudeau Foundation Scholars' Workshop on 'Ideas for Change: Creativity in Managing Socio-ecological Systems' at University of Saskatchewan, Saskatoon, May 2010.

Sustainability as connectedness: Conceptualizing the human-environment connections in Chilika Lagoon, India. 16th International Symposium on Society and Resource Management (ISSRM), Sam Houston State University, June 2010, Corpus Christi, Texas.

Principal collaborators outside Harvard:

Fikret Berkes, Natural Resources Institute, University of Manitoba, Canada

Sarah Coulthard, School of Environmental Sciences, University of Ulster, Northern Ireland, UK.

James Patrick Robson, Natural Resources Institute, University of Manitoba, Canada.

Ratana Chuenpagdee, Department of Geography, Memorial University of Newfoundland, Canada.

Hariramalu Ragavan, Environment and Energy Cluster, United Nations Development Programme, Malaysia

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