

ENVIRONMENT IN ASIA

Interdisciplinary Discussions and Future Directions

Date 11-12 November 2015

Venue Blk AS7, Shaw Foundation Building, #01-07
Faculty of Arts and Social Sciences, National University of Singapore,
5 Arts Link, Singapore 117570

This workshop is jointly organized by Asia Research Institute and Department of Sociology, National University of Singapore.

Academics work on environmental issues is increasingly inter-disciplinary; in some cases this is blurring the boundaries between disciplines. This is particularly true in pressing concerns such as climate change, environmental conservation, environmental disasters, effects of various forms of resource extraction and food security. Attempts are being made to bridge the gap between disciplines for effective and socially acceptable interventions in these pressing matters. Within NUS there is a need, to bring scholars from across disciplines to discuss issues relating to the environment in South Asia and Southeast Asia. The workshop aims to provide a platform for faculty and scholars within Singapore to discuss their ongoing research on environmental issues. The aim is to facilitate conversations on the state of these multi-disciplinary fields, to explore the relationship between social sciences and biological sciences and possibility of building of multidisciplinary collaborations between scholars in Singapore.

The planned presentations will deal with issues of biodiversity conservation, food security and equity, land use change and biodiversity loss, environmental history, human-wildlife relations, environmental ethics, transboundary haze, natural resource extraction and politics of environment.

REGISTRATION

Admission is free. Kindly register early as seats are available on a first come, first served basis. We would gratefully request that you RSVP to Ambika Aiyadurai (socaa@nus.edu.sg) indicating your name, organization, and email address.

CONVENORS

Dr Maribeth Erb

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11 NOVEMBER 2015 (WEDNESDAY)

09:30 – 10:00	REGISTRATION & TEA	
10:00 – 10:15	WELCOME & INTRODUCTORY REMARKS	
10:00	Prasenjit Duara Director, Asia Research Institute, National University of Singapore Maribeth Erb Department of Sociology, National University of Singapore Ambika Aiyadurai Department of Sociology, National University of Singapore	
10:15 – 11:15	KEYNOTE ADDRESS 1	
<i>Chairperson</i>	Maribeth Erb National University of Singapore	
10:15	The Mekong River Basin and its inhabitants as a Socio-Ecological System Alan Kolata Humanities and Social Sciences, Singapore University of Technology & Design	
11:00	QUESTIONS & ANSWERS	
11:15 – 11:30	TEA	
11:30 – 13:15	PANEL 1 – BOUNDARIES AND ENVIRONMENTAL CHALLENGES IN ASIA	
<i>Chairperson</i>	William Symes Department of Biological Sciences, National University of Singapore	
11:30	Robert Wasson LKY School of Public Policy National University of Singapore	Environmental Challenges in Asia: Planetary Boundaries
12:00	Alan Tan Khee Jin Faculty of Law National University of Singapore	Legislating Unilaterally and Extraterritorially against Transboundary Haze Pollution: The Singapore Legal Experiment
12:30	Cecilia Lim Department of Philosophy National University of Singapore	Zhu Xi, Territorial Boundaries and an Approach to Earth's Environmental Issues
13:00	QUESTIONS & ANSWERS	
13:15 – 14:15	LUNCH	
14:15 – 16:30	PANEL 2 – BIODIVERSITY CONSERVATION IN ASIA	
<i>Chairperson</i>	Emily Chua Department of Sociology, National University of Singapore	
14:15	Ambika Aiyadurai Department of Sociology National University of Singapore	Tiger Conservation and its Predicaments in the Mishmi Hills, Northeast India
14:45	Annu Jalais South Asian Studies Programme National University of Singapore	Suicides in the Sundarbans: What has Climate Change Got to Do With It?
15:15	L. Roman Carrasco Department of Biological Sciences National University of Singapore	Global Spatial Distribution of Tropical Forests: Agriculture Trade-offs and their Matching Conservation Strategies
15:45	William Symes Department of Biological Sciences National University of Singapore	Why Do We Lose Protected Areas? Factors Influencing Protected Area Downgrading, Downsizing and Degazettment (PADDD) in the Tropics and Sub-tropics
16:15	QUESTIONS & ANSWERS	
16:30	TEA & END OF DAY 1	
18:00 – 20:00	WORKSHOP DINNER (For Speakers, Chairpersons & Invited Guests)	

12 NOVEMBER 2015 (THURSDAY)

10:00 – 11:00	KEYNOTE ADDRESS 2	
<i>Chairperson</i>	Ambika Aiyadurai Department of Sociology, National University of Singapore	
10:00	Development against Economic Growth: reconsidering debates in South Asian Environmental History Rohan D' Souza Graduate School of Asian and African Area Studies, Kyoto University, Japan	
10:45	QUESTIONS & ANSWERS	
11:00 – 11:15	TEA	
11:15 – 13:00	PANEL 3 – ENVIRONMENT AND POLITICS	
<i>Chairperson</i>	Lyle Fearnley Humanities and Social Science, Singapore University of Technology & Design	
11:15	Tim Barnard Department of History National University of Singapore	Botany in a Garden City: The Singapore Botanic Gardens in a Post-1965 Developmental State
11:45	Maribeth Erb Department of Sociology National University of Singapore	Politics and the Environment in Eastern Indonesia
12:15	Md Saidul Islam Division of Sociology Nanyang Technological University	Slash and Burn Culture in Indonesia: Environmental and Social Outcomes Beyond Borders
12:45	QUESTIONS & ANSWERS	
13:00 – 14:00	LUNCH	
14:00 – 15:45	PANEL 4 – LOCAL COMMUNITIES AND LIVELIHOODS	
<i>Chairperson</i>	Robert Wasson LKY School of Public Policy, National University of Singapore	
14:00	Lyle Fearnley Humanities and Social Sciences Singapore University of Technology & Design	After the Livestock Revolution: Disease, Risk and Domestic Ecology in China
14:30	Kais Shaikh Mohammad Division of Sociology Nanyang Technological University, Singapore	Global Climate Change and Aquaculture: The Case of Commercial Shrimp Farming in Bangladesh
15:00	Yuchen Zhang Department of Biological Sciences National University of Singapore	Modelling of Agricultural Expansion in Myanmar
15:30	QUESTIONS & ANSWERS	
15:45 – 16:00	CLOSING REMARKS	
15:45	Maribeth Erb Department of Sociology, National University of Singapore Ambika Aiyadurai Department of Sociology, National University of Singapore	
16:00	TEA & END OF WORKSHOP	

KEYNOTE 1

The Mekong River Basin and its Inhabitants as a Socio-Ecological System

Alan Kolata

Professor, Humanities and Social Sciences
Singapore University of Technology & Design

Large rivers provide many ecosystem goods and services to people including drinking water, irrigation for agriculture, rich fisheries, hydroelectric power and cultural identity. Conceptual frameworks and empirical data for understanding how physical, biological, and social dynamics in rivers systems create ecosystem services and livelihoods are sparse. The paucity of models and data limits the ability to predict the effects of widespread ecosystem changes—for example, from hydropower development and climate change—on the livelihoods of people who depend on flood-pulse river ecosystems such as those of the Mekong River Basin. This presentation will explore the coupled physical, hydrological, biological and social processes that affect the socio-ecological system of the Mekong River and have substantial impacts on biological productivity, human livelihoods and economic development in the region.

KEYNOTE 2

Development against Economic Growth: Reconsidering Debates in South Asian Environmental History

Rohan D' Souza

Associate Professor
Graduate School of Asian and African Area Studies
Kyoto University, Japan

South Asian environmental history has largely occupied itself with trying to explain the complicated and troubled relationships between dramatic ecological change and British colonial rule. The first framework widely referred to as the '*colonial-watershed*' – claimed that British colonial rule profoundly undermined the previous ecological harmony that characterized social organization in South Asia. In contrast, the '*continuities-with-change*' advocates argue that while the 'pace of change' was undoubtedly 'rapid and epochal', radical environmental transitions were not entirely new to the Indian sub-continent. In effect, rather than treating British colonial impacts as the only and most decisive ecological encounter, the '*continuities-with-change*' view underlined the need for long term histories about human-nature relationships in the subcontinent.

Whilst these two frameworks have over the years dueled, debated and generated a rich and productive scholarship, little effort has thus far been made at understanding the conceptual grounds upon which these different approaches stand. Put differently, did these two distinct rubrics about ecological change emerge as responses to similar questions and shared problems? Or, the reverse, the sharp differences in these two approaches, even as they train their sights on ecological change, are a result of dissimilar ideological vantages? My talk will review and explore the conceptual tensions that underwrite these two most debated frameworks in South Asian environmental history as problems of the broader differences over the idea of the developmental state and economic growth.

Environmental Challenges in Asia and Planetary Boundaries

Robert Wasson

Senior Research Fellow
Institute of Water Policy, Lee Kuan Yew School of Public Policy
National University of Singapore

Current emphases on environmental management in Asia are mostly at the local level, but with increasing national emphasis on Greenhouse Gas emissions. But it is becoming increasingly clear that climate change and biosphere integrity are highly integrated emergent system phenomena that operate globally. Large changes in this integrated system are likely to push Earth into a no-analogue state (the Anthropocene) with severe consequences for humanity. This integrated system also interacts with other global systems: stratospheric ozone depletion, ocean acidification, flows of nitrogen and phosphorous, land system change, freshwater use, and the introduction of new materials such as synthetic chemicals. The idea of Planetary Boundaries (PB), that include all of the phenomena listed above and beyond which the Earth system should not be pushed, raises questions of scale and governance. The current PB framework is global but there is a need for the coupling of PB definitions, possibly at the scale of large river catchments, with development goals for integration to the global scale. While such a project should be designed and implemented by nation states and groups of states, with inputs from the research community, the larger governance challenge is at the global scale. Here Earth System thinking is required and several ideas have been developed to keep Earth within safe PBs. One idea is to expand the commons sector of the global economy with institutions created at a variety of spatial scales. This and other ideas raise two fundamental questions for Asia: 1, How can PBs be defined in Asia? ; 2, How can power, both political and economic, be incorporated into a set of global institutions to stay within global PBs?

Legislating Unilaterally and Extraterritorially against Transboundary Haze Pollution: The Singapore Legal Experiment

Alan Khee-Jin Tan

Professor
Faculty of Law
National University of Singapore

On 25 September 2014, Singapore's new Transboundary Haze Pollution Act came into operation. The Act is a dramatic piece of legislation that creates extra-territorial liability for entities engaging in setting fires abroad that cause transboundary smoke or "haze" pollution in Singapore. The impetus for the Act's enactment can be traced to the serious haze pollution from Indonesia that hit Singapore in June 2013. And with the ongoing haze in 2015, several companies have already been issued notices by the Singapore authorities, as a possible precursor to prosecution. The Act is at once ambitious and controversial in that it seeks to impose liability based on a series of legal presumptions - that a particular entity owns a certain tract of land abroad if there are maps showing such, and that it is the burning on this land that causes haze pollution in Singapore. This paper critiques the prospects of this Act in successfully deterring large-scale burnings and fires in Indonesia, given the complexities of land use conflicts and inadequate law enforcement on the ground. In other words, the Act does not sufficiently engage in multi-disciplinary enquiries into socio-economic and -political factors such as encroachment by dispossessed local communities, the prevalence of corruption among local government officials, the uncertainties of land use tenure and the use of fires by both companies and villagers as a weapon of intimidation.

Zhu Xi, Territorial Boundaries and an Approach to Earth's Environmental Issues

Cecilia Lim

Associate Professor
Department of Philosophy
National University of Singapore

A number of environmental philosophers have turned to Asian philosophies in the hope that these various philosophical frameworks would provide a means of guiding our views on Nature and on the environment. While quite a number of these philosophers provide such frameworks, not that many have explored sufficiently how these rather abstract frameworks can be brought to bear upon the environment in a practical way. In this paper, I examine the views of the ancient Chinese philosopher Zhu Xi. I then suggest that his philosophical views and his understanding of Nature can usefully applied to the environment and environmental issues. I end by briefly appealing to the recent 'haze' situation, as an example of how his views might be brought to bear on environmental issues and concerns.

Tiger Conservation and its Predicaments in the Mishmi Hills, Northeast India

Ambika Aiyadurai

PhD Student
Department of Sociology
National University of Singapore

Mishmi people living on the Indo-China border claim tigers as their brothers and take credit for tiger conservation. They observe taboos against hunting tigers. Using this notion of relatedness with tigers, Mishmi question the state's decision to declare Dibang Tiger Reserve and its scientific surveys of tigers and habitat mapping. This paper highlights how Mishmi people relate to tigers and how their understanding of tigers contests with the versions of state and science. State considers tigers as its national property and biologist's view of tiger as an endangered species. These views stand in opposition to local interpretations of 'nature'. Using in-depth interviews and participant observations in Dibang Valley, I provide an ethnographic analysis of how the different ideas of nature are played out by different actors in Arunachal Pradesh, Northeast India. Tiger conservation projects bring these conflicting versions of nature together creating unexpected encounters between Mishmi, state and scientists. This paper aims to contribute to the understanding of changing notions of nature in the age of a globalized and interconnected world.

Global Spatial Distribution of Tropical Forests: Agriculture Trade-Offs and their Matching Conservation Strategies

L. Roman Carrasco

Assistant Professor
Department of Biological Sciences
National University of Singapore

The lack of information on the spatial distribution of the trade-offs between tropical forests ecosystem services and agriculture leads to poorly planned land-use and hampers the adequate choice of conservation strategies. To inform conservation interventions at the pantropical level, we: (i) performed a spatially explicit analysis of the trade-offs between agricultural benefits, carbon emissions and losses of other ecosystem services due to tropical deforestation; and (ii) identified strategies to correct these trade-offs based on payments for ecosystem services (PES), yield gap closures and environmental certification schemes. We find that large and spatially heterogeneous net economic losses of ecosystem services occur across the tropical forest biome. We find that carbon PES is largely viable in the Amazon Basin but not in most of Africa and Southeast Asia. Including other ecosystem services, PES would be largely viable. Yield gap closures below 3% can meet agricultural contributions in deforested land between 2000-2012 in most regions, providing an alternative for non-viable PES. Environmental certification would be essential in countries like Indonesia and Democratic Republic of Congo where needed yield gaps are large but large agribusinesses are associated with large negative trade-offs. Our results provide a spatially tailored plan for conservation strategies for tropical forests.

Why Do We Lose Protected Areas? Factors Influencing Protected Area Downgrading, Downsizing and Degazettment (PADDD) in the Tropics and Sub-tropics

William Symes

PhD Student
Department of Biological Sciences
National University of Singapore

Protected areas (PAs) are an essential tool for the conservation of biodiversity globally. Previous studies have focused on the effectiveness of PAs and the design of optimal PA networks. However, not all PAs remain intact permanently; many PAs undergo downgrading, downsizing and/or degazettment (PADDD), a fact largely ignored until recently. The drivers of enacted PADDD events and the factors influencing its spatial occurrence are poorly understood, potentially undermining the efficacy of PAs and PA networks. Here we examine the spatial relationship between PADDD and economic, demographic, and structural variables, using a 110 year dataset of 342 enacted PADDD events across 44 countries in the tropics and sub tropics. We find that the probability of an enacted PADDD event increases with the size of the PA and through a synergistic interaction between PA size and local population densities. Our results are robust to the under-reporting of enacted PADDD events that occur among smaller PAs and in regions with lower population density. We find an economic motive for PADDD events, given that the opportunity costs associated with larger PAs are higher, on average, than smaller PAs. Our findings suggest a need for conservation practitioners to better consider PA characteristics, as well as the social, economic, and political context in which PAs are situated, to aid the creation of more efficient and sustainable PA networks. In particular, the dynamics of enacted PADDD events highlight the need to explicitly consider PA robustness as a core component of systematic conservation planning for PA networks.

Botany in a Garden City: The Singapore Botanic Gardens in a Post-1965 Developmental State

Timothy P. Barnard

Associate Professor
Department of History
National University of Singapore

The Singapore Botanic Gardens was a colonial institution that promoted botany and science for the needs of Empire, and played an important role in the development of forest conservation and plantation agriculture in the region. Following Singaporean independence in 1965, the new government inherited an institution that appeared bereft of any ability to contribute to modern industrialization and economic development. As resources were directed toward the goals of a developmental state the Gardens would have to find a new role, or simply be ignored as a large recreational park in the middle of a transforming urban landscape. This presentation will discuss the various phases the Gardens went through during this period, during which a newly independent government was molding the bureaucracy, and environment, to fit its needs.

Politics and the Environment in Eastern Indonesia

Maribeth Erb

Associate Professor
Department of Sociology
National University of Singapore

Environmental conflicts have occurred on several occasions in the Western part of Flores Island in Eastern Indonesia, since the beginning of the 21st century. These conflicts need to be partially understood against the background of radical political reform that Indonesia has embraced since the fall of President Suharto, the long standing authoritarian leader of the New Order, at the end of the last century. These reforms include decentralization and regional autonomy, which have granted local leaders, particularly in the districts, considerable power to control activities in regards to the exploitation of resources in their district. Although protected areas are still under the jurisdiction of the ministry of forestry, and this has itself caused problems when the district heads overstep their authority, the autonomy of the regions has opened up a lot of scope for regional heads to flex their economic muscles and attempt to wring revenue from natural resource extraction. Some early conflicts were focused on run-ins between government or global NGOs who were circumscribing local communities use of seas or land that they felt was their right to exploit, but had been designated for conservation. More recent conflicts have to do with an ironically different dynamic. Local communities across Flores have been attempting to resist the encroachment of mining companies into their lands, given concessions by empowered local district heads that guarantee them initial access to the lands of these communities for mining exploration. Now it is the communities who are fighting in the name of sustainable land and conservation, and the government and external actors who are, in the name of economic development, claiming a different purpose for these community lands. In this paper I will explore this recent case of conflict over mining in Western Flores, to explore the development of various discourses about environmental sustainability versus economic development and examine the way people attempt to construct coherent understandings of their relationships with the land, using ideas of tradition as well as global notions of conservation.

Slash-and-Burn Culture in Indonesia and Environmental and Social Outcomes Beyond Borders: Towards Plural Environmental Governance

Md Saidul Islam

Assistant Professor
Division of Sociology
Nanyang Technological University, Singapore

Recurrent haze in Singapore is attributable to rampant forest fires in Indonesia due to extensive slash-and-burn (S&B) culture. Drawing on the “treadmill of production” and environmental governance approach, we examine causes and consequences of this culture. We found that despite some perceived benefits, its environmental consequences include deforestation, soil erosion and degradation, global warming, threats to biodiversity, and trans-boundary haze pollution; while the societal consequences comprise regional tension, health risks, economic and productivity losses, as well as food insecurity. We propose a plural coexistence framework of governance for targeting S&B that incorporates strategies of incentives, education and community resource management.

After The Livestock Revolution: Disease, Risk and the Domestic Ecology of Duck Farming In Southeastern China

Lyle Fearnley

Assistant Professor
Humanities and Social Science
Singapore University of Technology and Design

Global health organizations have identified southern China's ecology as an "influenza epicenter"; that is, as a likely source of the flu viruses that cause global pandemics. Flu researchers highlight what they call "age-old" duck farming practices as sources of ecological and pandemic risk, and argue that increasing the industrial scale of poultry farms will help reduce risk, primarily through biosecurity enhancements such as better separation and enclosure. In this paper, I show that this linear trajectory of modernization fails to account for the actual growth and transformation of duck farming in China since the introduction of market reforms in the 1970s. Drawing from the anthropological literature on human-environment interactions and the domestication of nature, I show that China's "livestock revolution" has involved not only the quantitative growth of duck populations, but also a qualitative shift in the organization of human-duck interactions. The paper focuses on how duck farmers develop new concepts and practices for dealing with disease in conjunction with these changes to what I call the domestic ecology of duck farming. I conclude by tracing some of the unintended effects of global pandemic planning on the ways in which poultry farmers perceive and manage disease risks.

Global Climate Change and Aquaculture: The Case of Commercial Shrimp Farming in Bangladesh

Kais Shaikh Mohammad

PhD Student

Division of Sociology

Nanyang Technological University, Singapore

Global aquaculture is one of the key contours in the sociology of global agro-food system. With its increasing role in the world economy and food security in the context of the exhaustion of marine fisheries, global aquaculture demands considerable scholarly attention. Global aquaculture, as a socio-ecological system, is profoundly affected by social and environmental disruptions and perturbations – among which global climate change is one. With its intense and unsettling repercussions in different regions and sectors, climate change impacts human communities in many ways – the majority of which are compound, indirect, and ambiguous. Commercial shrimp in Bangladesh, as part of global industrial aquaculture, is deeply affected by climate change. Though Bangladesh earns a significant amount of foreign currency from the commercial shrimp, which is locally known as ‘white gold’ because of its high transnational value, Bangladesh cannot meet its target because of under-capacity operation of shrimp due to its exposure to climate change vulnerability and extremes. Coastal Bangladesh, where shrimp is cultured, is frequently affected by extreme climatic disruptions like cyclones and storm surges that severely damage the entire coastal aquaculture. Drawing on primary and secondary data from Bangladesh shrimp industry, this paper critically examines how the commercial shrimp farming in Bangladesh is affected by global climate change.

Modelling of Agricultural Expansion in Myanmar

Yuchen Zhang

PhD Student

Department of Biological Sciences

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Asia is facing accelerated deforestation, especially with an increasing demand for timber and more agricultural land. With rich biodiversity, strong endemism, but poor protection, forest ecosystems in Myanmar are at high risks of irreversible degradation. Traditional conservation plans tend to be static and give insufficient attention to spatial and temporal changes of threats, which may lead to reduced cost-effectiveness. Thus, with limited budget and time, areas with the highest risk in future should be identified and prioritized with more resources. This study aims to facilitate forest conservation decision-making process in Myanmar by analyzing spatial patterns of land use and predicting areas with the highest risk of deforestation due to agricultural expansion of 14 selected crops. Logistic regression and the von Thünen model were used to model the conversion of forests to agricultural land for each crop. This land use change takes into consideration agriculture value, transportation cost, elevation, and social-political stability of Myanmar. Probability of forest occurrence was predicted under four scenarios: increasing agricultural value, decreasing transportation costs, increasing socio-political stability, and a worst-case scenario combining decreasing transport costs with increasing socio-political stability. In addition, deforestation threats to Key Biodiversity Areas were also predicted under the worst-case scenario. This study found that all four variables mentioned above are significant predictors of land use changes in Myanmar and the Key Biodiversity Areas are seriously affected by deforestation.