Merit of Research and Proposed Travel

How is your current research innovative and necessary?

Hydropower projects are agents of massive landscape transformation and nowhere is this clearer than in the Himalayan state of Uttarakhand in India, where currently 450 small and large hydropower projects are in various stages of development. The Government of India is committed to increasing hydropower capacity in the country, recently declaring a 175 GW renewable energy target for 2020 as part of its emissions reduction goals under the Paris Climate Agreement. Most of these dam projects are proposed in the Himalayan range, and if all are developed, the Indian Himalayas will have one of the highest dam densities in the world (Grumbine & Pandit, 2013). Uttarakhand is also an area of heavy seismic activity and high rainfall, where rampant construction activity is resulting in increased incidences of landslides and flooding. In 2013, heavy rain and floods resulted in the death of over 5000 persons. While issues of biodiversity loss and human displacement as a result of these projects have been highlighted, little attention has been paid to the seismic vulnerability of the mountains or to the impacts of landslides and flash floods on communities living near the catchment area. This is especially worrying since many under-construction projects are using ‘run-of-the-river’ technology, which involves digging tunnels through the mountains to divert water to generation stations, and thus, have the potential for exacerbating landslides in an already fragile ecosystem.

**My research will examine how geomorphological risks and potential social and environmental risks are accounted for in hydropower planning.** To address this question, my research will investigate how scientists, engineers and bureaucrats produce, use and interpret information on geomorphological hazards and risks for hydropower projects in the Indian Himalayas, especially how concerns around seismic activity, slope failures, landslides and environmental degradation are negotiated and contested in the design and operation of these projects. I propose to study two operational projects (one run-of-the-river and one reservoir-based) in Uttarakhand, India through an analysis of government reports and project documents, as well as through in-depth interviews with key personnel. The research is innovative because it is the first attempt to study the production and mobilization of geomorphological information in project planning and its impact on communities living around dams. The research is necessary considering the increasing number of landslides and flash floods in Uttarakhand, as well as the large number of people exposed to these risks. Furthermore, this research is urgent in light of the proposed Pancheshwar Multi-Purpose Project (6,720 MW), one of the largest projects in India, which will affect 30,000 families in the Uttarakhand region and submerge an area of 116 square kilometers.

How will this research be useful to both the scientific community and society in general?

This research places itself at the intersection of political ecology and science and technology studies (STS), focusing on the production, circulation and application of environmental knowledge (Goldman & Turner, 2011). By exploring how environmental scientific knowledge is produced and used in policy and project design, **my research will contribute to growing scholarship within political ecology that examines the entanglements between scientific knowledge and social norms and institutions** (Jasanoff, 2004). Given the number of dams planned in the Himalayas, critical analysis of dams and their impacts on both people and the environment is more urgent than ever. This is especially important in India, where policy discourses tend to prioritize the need for clean energy and energy security while paying less attention to the potential risks associated with hydropower development. The findings of the
research will be shared with the large number of citizen groups and NGOs working on issues related to hydropower projects in Uttarakhand, as well as with policymakers. *I strongly believe that a focus on the contested nature of environmental knowledge can help steer the national conversation towards the real impacts of the construction of hydropower projects and support the creation of sustainable and equitable policy alternatives.*

**How will this travel award contribute to your graduate research and professional goals?**  
The travel award will be used to fund the fieldwork portion of my research project and hence, will support the completion of my master’s thesis in Geography. Fieldwork would include document collection and analysis, as well as in-depth interviews with geomorphologists and civil engineers involved in the project planning, project developers, activists, and policymakers in Uttarakhand. This initial fieldwork will also inform my doctoral research as I continue to my PhD. I see the work supported by this travel award not only as an opportunity to develop my professional network, but also to grow as an academic committed to people-centric and policy-relevant work. In the past I have worked on issues of displacement and rehabilitation surrounding dam projects as well as a consumer representative for electricity consumers in Mumbai. Through this project, I hope to continue contributing to debates around large infrastructure projects informed by rigorous interdisciplinary research.

**Budget**  
The research will be based in the state of Uttarakhand in India. Funds are requested for forty-five days of fieldwork in Dehradun (the state capital), Tehri Garhwal and Shrinagar districts (locations of the hydropower projects) to be conducted in Fall 2019. The total estimated cost of is $3050. I have secured a grant of $2000 from the Energy and Environmental Systems Institute (EESI) of the Pennsylvania State University. This award will help cover the remaining costs. The following table provides the itemized list of travel and living expenses.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity (units)</th>
<th>Unit cost ($)</th>
<th>Total Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airfare (New York - Delhi)</td>
<td>1 roundtrip</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Bus fare (Delhi - Dehradun, Uttarakhand)</td>
<td>1 roundtrip</td>
<td>25*</td>
<td>25</td>
</tr>
<tr>
<td>Local transport (buses, taxi, etc.)</td>
<td>45 trips</td>
<td>15</td>
<td>675</td>
</tr>
<tr>
<td>Lodging and meals</td>
<td>45 days</td>
<td>30#</td>
<td>1350</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>3050</strong></td>
</tr>
</tbody>
</table>

* taken as average fare for buses from Delhi to Dehradun as given on the website of the Uttarakhand Transport Corporation; # taken as average of prices of hotels in Uttarakhand on the internet ($20), with $10 for daily meals.

**References**  


Department of Geography
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The Pennsylvania State University
University Park, PA – 16802
Phone: 
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EDUCATION

Doctor of Philosophy (M.S. + Ph.D.) in Geography 2023
The Pennsylvania State University, University Park (PA) (Expected)

Master’s degree in Economics and Public Policy 2013
Sciences Po (Institut d’Études Politiques de Paris), Paris (France)
• First year joint with École Polytechnique and ENSAE

Bachelor of Arts in Economics 2010
St. Xavier’s College, Mumbai University, Mumbai (India)
• Minor in Political Science and Mathematics
• Honours in Economics and Political Science

RESEARCH AND PROFESSIONAL EXPERIENCE

Department of Geography, The Pennsylvania State University Aug. 2018–present
Research Assistant
• Literature review and analysis on scholarship in Energy Geographics

Prayas (Energy Group), Pune (India) Jan. 2015 – Jun. 2018
Research Associate for electricity generation and supply
• Analysis of the framework and practice of electricity regulation and policy in the state of Maharashtra and the city of Mumbai
• Part of team making interventions in cases before the Maharashtra Electricity Regulatory Commission as designated consumer representatives

Research Analyst
• Analysis and briefings to Members of Parliament (MPs) on Bills and policy matters pertaining to public finance, energy and labour sectors in India

PUBLICATIONS

Research reports


Policy Briefs

Popular press


INVITED TALKS
Invited Speaker, “In the Name of Competition: The annals of ‘cost-plus competition’ in the electricity sector of Mumbai.” Tata Institute of Social Sciences (TISS), Mumbai, India (August 2017).
Invited Speaker, “The electricity sector in Mumbai.” Tata Institute of Social Sciences (TISS), Mumbai, India (August 2016).
Presenter, “Center-State Financial Relations.” Workshop for Goa State Legislative Assembly conducted by PRS Legislative Research in Panjim, Goa (December 2013).

ACADEMIC AWARDS
The Eiffel Excellence Scholarship, Government of France 2011-13
Émile-Boutmy Excellence Scholarship, Sciences Po, Paris 2011-13

PROFESSIONAL AFFILIATIONS
American Association of Geographers (AAG) 2018-present
Supporting Women in Geography (SWIG) 2018-present

SOCIAL INVOLVEMENT
Volunteer, Kutch Mahila Vikas Sangathan, Gujarat (India), November 2014
Volunteer, Maitri Jansangathan, Uttarakhand (India), 2010-11
Volunteer, Narmada Bachao Andolan, Madhya Pradesh (India), 2010-11
Volunteer, Spandan Samaj Sewa Samiti, Madhya Pradesh (India), May and September 2009

SKILLS
• Languages: English, Hindi, French (advanced), German (basic)
• Software: Stata (advanced), MS Office (advanced), ArcGIS (basic), Tableau (basic)