

The University of Queensland - IIT Delhi Academy of Research Joint PhD Project

Project title	Balancing the health and climate benefits of 'greening' cities in India and Australia
Project code	UQIDAR 00210
Project description	<p>An accumulating body of evidence suggests that living in and around natural environments, including photosynthesising vegetation and the presence of parks, public gardens and other non-developed environments may have beneficial effects, particularly for mental health and cardiovascular disease. Planners and policy-makers historically sought to increase 'greenspace' in urban areas for its aesthetic properties, but are now informed by the capacity of greenspace to sequester carbon dioxide and mitigate urban heat islands. These characteristics offer the potential for long- and short-term health 'co-benefits' of greenspace, respectively, in addition to those offered by greenspace (i.e., buffering from air pollution, enabling physical activity). Because greenspace is ubiquitous, even in cities, and the level of and nature of the exposure are at least partly modifiable, even a modest protective effect may contribute to a substantial averted disease burden across the population. However, evidence is scarce and is a barrier to developing initiatives to 'green' cities. Sub-optimal greenspace has a long legacy, and policy-makers in India and Australia want to reconcile the different dimensions of how changing the greenspace mixture affects health. This information is needed to identify how to maximise health gains while reducing air pollution and heat, and without forgoing CO₂ sequestration. This is not feasible with current tools, but existing health impact assessment frameworks provide a foundation to fill this important knowledge gap. Leveraging satellite remote sensing, climate modelling, and epidemiology, this multidisciplinary project aims to use existing studies in Australia and India to quantify the potential health benefits of urban greenspace on cardiovascular disease and mental health. That will be used for health impact assessments, where the type and diversity of greenspace is altered under in five scenarios developed in consultation with policy-makers in both countries.</p>
Project outcomes	<ol style="list-style-type: none"> 1) Development and validation of modelling tools that allow for simultaneous assessment of climate and health benefits of realistic urban greenspace scenarios in India and Australia. 2) New scientific insights from these tools that are relevant studies performed in other countries. 3) Making tools publicly available to foster and support open and collaborative research on this topic.
Advisory team	<p>UQ Principal Supervisor Associate Professor Luke Knibbs Public Health l.knibbs@uq.edu.au https://researchers.uq.edu.au/researcher/2926</p> <p>IITD Principal Supervisor Associate Professor Sagnik Dey Atmospheric Sciences Sagnik.Dey@cas.iitd.ac.in web.iitd.ac.in/~sagnik</p>

<p>Type of student Discipline background of student</p>	<p>Applications are open to: I or q students who meet eligibility criteria.</p> <p>This project suits students from a range of backgrounds, including (but not limited to) public/environmental health, environmental engineering, atmospheric science, remote sensing, environmental science, ecology, or biostatistics.</p>
<p>Ideal candidate</p>	<p>Essential Capabilities: Strong quantitative skills, as evidenced by transcripts and other relevant experience, and willingness to build on those skills. Excellent written and verbal communication. High level of proficiency in at least two of R, Python, Matlab, and a GIS packages (ArcGIS/QGIS). Demonstrated ability to work well as part of a team. Demonstrated ability to multi-task and work to competing deadlines.</p> <p>Desirable Capabilities: High level of proficiency in three or more of R, Python, Matlab and ArcGIS/QGIS. Experience running climate or chemical transport model (CTM) simulations. Previous research experience, as demonstrated by peer-reviewed publications in reputable journals as fi</p> <p>Expected qualifications (Courses/Degrees etc.): Please see above.</p>
<p>Application process</p>	<p>Apply online by the due date: https://www.uqidar.org/students/how-to-apply/</p>