PhD Scholarship in environmental assessment modelling

UNSW Australia, Sydney
Sustainability Assessment Program
Water Research Centre, School of Civil and Environmental Engineering

A PhD position is available within the Sustainability Assessment Program at the School of Civil and Environmental Engineering, UNSW. The 3-year research is part of an ARC Discovery Project aimed at investigating the environmental impacts of construction in Australia through the development of a sophisticated hybrid environmental assessment model. The project will assist in identifying the most significant environmental impacts, critical areas for mitigation efforts and informing environmental policy and programs within the Australian construction industry.

The PhD position

The PhD researcher will be based at the Water Research Centre at UNSW Kensington Campus, Sydney and will be supervised by Associate Professor Tommy Wiedmann (UNSW) and Dr Robert Crawford (UniMelb). The research will focus on the creation of a comprehensive hybrid approach to environmental assessment based on input-output analysis (IOA) and life cycle assessment (LCA). The PhD researcher is required to have excellent numerical skills and some knowledge of environmental impact assessment techniques. S/he will work on integrating process-based LCA data in the Industrial Ecology Virtual Laboratory (ielab.info). This will include programming and managing data feeds, uncertainty modelling and developing a graphical user interface. In the advanced stages of the project, the PhD researcher will develop analytical procedures to create a sophisticated method of implementing pathway extraction and replacement routines as well as managing and understanding the large number of results expected from the model, including their reliability. Statistical and diagnostics tools and visualisation of results will be needed. The development of one of the most sophisticated and comprehensive models for assessing environmental impacts ever produced will enable cost- and time-efficient evaluation of multiple environmental impacts at a high level of detail and completeness. This will lead to considerable improvements to the environmental performance of Australian construction projects.

The candidate should have a sound technical ability and experience working with quantitative data as evidenced by their prior work. Programming skills are essential. The candidate would ideally have some prior experience in the development or application of quantitative sustainability assessment methods, computational techniques and database management. Experience in environmentally extended input-output analysis is advantageous. The candidate should have excellent written and oral communication skills,
an ability to manage research projects, and possess or show willingness to develop good working relationships with researchers in the relevant field.

**Scholarship Details**

The PhD scholarship offers a stipend of $25,000 per annum (tax-exempt) for three years. Please note that the scheme does not include the payment of tuition fees. A tuition fee scholarship may be available for overseas candidates based on merit.

A limited amount of part-time tutoring may be undertaken by the candidate subject to positions being available at the School and to satisfactory research and tutoring performance. This income will be taxable.

**Research Environment**

The University of New South Wales (UNSW) is a founding member of the prestigious Group of Eight research-intensive universities in Australia and ranked 48th (27th for Engineering) worldwide on the 2014/15 QS World University Rankings, one of only five Australian institutions to make the top 50. The PhD researcher will be integrated within the Sustainability Assessment Program at the School of Civil and Environmental Engineering led by Associate Professor Tommy Wiedmann (http://sustainabilityresearch.unsw.edu.au / http://www.wrc.unsw.edu.au/sustainability).

**Applying**

Applications are invited from candidates with a strong tertiary qualification in mathematics, statistical analysis, data management, programming or related fields. Applicants are expected to have a 1st class Honours (or equivalent ranking) in a suitable undergraduate degree. Candidates with a working background in industrial ecology, sustainability assessment, sustainable engineering, environmental footprinting, input-output analysis, life cycle assessment, or similar fields are particularly encouraged to apply.

Enquiries and applications should be sent to Dr Tommy Wiedmann (t.wiedmann@unsw.edu.au). Applications must include a cover letter referring to the skill profile outlined above, academic transcripts, a CV and the names and contact details of two referees. Incomplete applications will be returned without evaluation. **The deadline for applications is 19 October 2015.** The candidate would ideally commence in 2015.

The research is sponsored and managed under ARC Discovery Project DP150100962, led by Dr Robert Crawford at The University of Melbourne.