



**Murdoch**  
UNIVERSITY

Perth | Singapore | Dubai

## Research in Environmental Engineering

Research in Environmental Engineering is an interdisciplinary endeavour covering a wide range of topics centred on engineering technology to achieve sustainable development whilst achieving positive social, environmental and economic outcomes. Research is undertaken in conjunction with industry, government and community partners located in urban, rural and remote communities within Australia and developing countries.

The Environmental Engineering research facilities include the full spectrum from laboratory through to full-scale field sites. It is a hallmark of the program that many of the projects blend fieldwork and implementation with laboratory and/or computer modeling work. Application-oriented research and industrial collaborations are strengths of the Murdoch program. The environmental engineering team is highly interactive, individualized and interdisciplinary with nearly all projects involving several staff investigators working closely with the students.

### Research topics

Research topics predominantly relate to:

- Water systems
- Resource recovery
- Pollution mitigation
- Food production systems
- Built environment
- Low carbon energy systems
- Water and wastewater treatment
- Integrated water, energy and sanitation systems

Research into these discrete topics is often couched with a view towards integrated and decentralised systems. Environmental Engineering staff at Murdoch University have world-class rankings in the areas stated – their website profiles provide additional information on their expertise and experience.

### For further information

[www.murdoch.edu.au/School-of-Engineering-and-Information-Technology/Research/Environmental-Engineering/](http://www.murdoch.edu.au/School-of-Engineering-and-Information-Technology/Research/Environmental-Engineering/)

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Staff are supported in the teaching and research programs by a range of industry specialists and adjunct academics to add technical depth and knowledge breadth to these activities.



## Research areas

Environmental Engineers at Murdoch University undertake research in the following areas:

### WATER SYSTEMS

- Water auditing, conservation and efficiency
- Wastewater treatment and recycling
- Triple bottom line engineering

### RESOURCE RECOVERY

- Solid waste minimisation and collection
- Organic waste reprocessing
- Building waste recycling

### POLLUTION MITIGATION

- Air pollution and odour control
- Greenhouse gas and aerosol emissions
- Soil improvement and pollution control
- Bioremediation, soil organics and fertilisers

### FOOD PRODUCTION SYSTEMS

- Aquaculture and aquaponics
- Water, nutrient and carbon cycling
- Organic agriculture
- Permaculture systems

### BUILT ENVIRONMENT

- Thermal performance of buildings
- CFD modeling
- Climate sensible design
- Sustainable materials

### LOW CARBON ENERGY SYSTEMS

- Building integrated energy systems
- Anaerobic digestion
- Carbon neutral settlements and livelihoods

### WATER AND WASTEWATER TREATMENT

- Desalination technologies and operations
- Advanced oxidation and membrane innovations
- Enhanced biological treatment processes

### INTEGRATED WATER, ENERGY AND SANITATION

- Solar-driven desalination
- Direct and indirect potable reuse
- Autonomous habitats and communities

## Research locations

Research projects are conducted in a diverse range of local and international locations and scales including:

### URBAN AND CITY SCALE

*For example:* Decentralised Water recycling for urban villages

*Industry partner:* Health Risk Assistant of Recycled Sewage for Industrial Application

*Awards:* National Banksia Award, WA Environment Award

### INDIGENOUS COMMUNITIES

*For example:* Decarbonising Cities and regions, carbon opportunities in remote indigenous communities

*Funder:* ARC Linkage

*Industry partner:* Horizon Power

### MINING CAMPS

*For example:* Carbon neutral mine site villages

*Funder:* ARC Linkage and Worley Parson Corp.

*Industry partner:* Matricon

### REGIONAL TOWNS

*For example:* Ammonia removal from industrial-scale composting plant air streams

*Funder:* Environmental Biotechnology CRC

*Industry partner:* Zeolite Australia P/L

### INTERNATIONAL DEVELOPMENT

*For example:* Sustainable sanitation

*Funder:* UNEP and UNESCO Community partners: Malawi

### INTERNATIONAL COLLABORATION

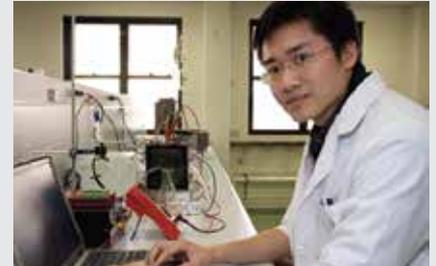
*For example:* Autonomous, sustainable solar membrane desalination

*Funder:* Western Australia Department of Housing and U.S. Bureau of Reclamation

### MURDOCH LABORATORY AND PILOT PLANT

*For example:* Organic fouling of reverse osmosis membranes and its removal

*Funder:* National Centre of Excellence in Desalination, Water Corporation



*"I completed my PhD at Murdoch University on microbial fuel cells with the environmental engineering research group. I was then able to secure a research position at CSIRO (Commonwealth Scientific and Industrial Research Organization) in this same area. I am grateful to the support given to me by the research team at Murdoch."*

**Dr Ka Yu Cheng**  
Research scientist



### Want to know more?

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