

Damien Giurco BEng (Hons), BSc, PhD

PROFESSOR OF RESOURCE FUTURES

Damien Giurco is Director (Innovation) at the Institute for Sustainable Futures. Concurrently, he is Professor of Resource Futures and team leader for Resources and Energy. With a focus on circular economy, integrated resources planning and sustainable production and consumption – Damien has worked collaboratively with government and industry clients spanning the minerals, water, waste and energy sectors to foster responsible prosperity. He has spoken and published widely across these fields. He is leader of the Wealth from Waste Cluster and Editor-in-chief for the journal *Resources*.

AREAS OF EXPERTISE

- Strategy and policy – minerals & metals, waste & resource recovery, urban water, climate & energy, sustainable digital cities
- Approaches – circular economy, modelling, backcasting, scenarios, cost-effectiveness, integrated resources planning, mineral-energy-water nexus, industry-government collaboration

EDUCATION

Ph.D.	Doctor of Philosophy, 'Towards sustainable metal cycles' University of Sydney	1999–2005
Dip. Bus Dev.	'Origini' Diploma in Business and Entrepreneurial Development MIB Trieste School of Management, Italy	2002
B.Eng. (Hons)	Bachelor of Engineering (Chemical) (Honours) University of Melbourne	1993–1998
B.Sc.	Bachelor of Science (majors: Applied Statistics & Pharmacology) University of Melbourne	1993–1998

EMPLOYMENT HISTORY

2016 –	Institute for Sustainable Futures, University of Technology Sydney Professor of Resource Futures
Sep–Nov 2015	Graduate School of Energy Science, Kyoto University Visiting Associate Professor
2012 – 2015	Institute for Sustainable Futures, University of Technology Sydney Associate Professor and Director (Research Outcomes)
2005 – 2011	Institute for Sustainable Futures, University of Technology Sydney Senior Research Consultant / Research Principal / Research Director
2005	Department of Chemical Engineering, University of Sydney Casual Lecturer
2003 – 2005	Warnken Industrial and Social Ecology, Glebe, NSW Research Consultant
1999	Kemcor Petrochemicals, Altona, VIC Safety Audit Engineer

AFFILIATIONS

- Editor-in-chief: *Resources*
- Co-chair World Resources Forum Asia Pacific (2015) www.wrfasiapacific2015.net
- Member of the Australasian Institute of Mining and Metallurgy (AusIMM)
 - Chair of AusIMM Sustainability Committee (2012-2014)
 - Member of Greenhouse and Energy Panel (2012)

SELECTED PROJECTS

Resource and Energy Futures

- **Wealth from Waste Cluster:** Led by UTS, Damien directs this three-year, \$9m research program in partnership with CSIRO and Monash, The University of Queensland, Swinburne University of Technology and Yale University (USA). Cluster research is supporting circular economy pathways and policies for metals by identifying above-ground stocks, developing new technologies for capturing value from waste, understanding the role innovative business models and consumer behaviour in enabling an effective transition.
- **Telstra electronics reuse and recycling strategy:** Working closely with Telstra and the input of industry leaders, ISF drafted the electronics reuse and recycling strategy to support the improved management of electronic waste. Through a pilot eCycle program, over sixty tonnes of e-waste was collected from hundreds of businesses across Australia.
- **NSW Environmental Trust coin cell battery recycling.** This project is working to develop and trial new designs for child safe containers which can be used in the collection of coin and button cell batteries for recycling which currently present a serious hazard to young children through accidental ingestion.
- **Materials efficiency:** This project for Sustainability Victoria reviewed international strategies for developing materials efficiency knowledge and identified development pathways amongst consultants and industry in Victoria.
- **Waste fires:** Research undertaken for the Commonwealth Department of the Environment reviewed literature pertaining to the incidents of fires in landfills and during the transport of waste, including those arising from tyre stockpiles and from lithium batteries. The report identified a lack of data across states in Australia pertaining to the issue.
- **CSIRO Mineral Futures Collaboration Cluster:** UTS led the Commodity Futures theme in this cluster, alongside technology futures (University of Queensland and Cluster leaders) and Regional Futures (Curtin, ANU, CQU). The work developed *Vision 2040: Innovation in Mining and Minerals* and identified the need for a national minerals strategy. The research also developed innovative mineral supply projections of 'peak minerals'.
- **Resourcing Future Generations:** This international collaboration is working to improve resource governance by understanding the state of play for global mineral exploration, supply and demand and Damien coordinated the development of the Resourcing Future Generations White Paper.
- **Victorian Department of Primary Industries: Visions for Latrobe Valley industry clusters.** This project developed industrial-ecology inspired visions for the Latrobe Valley to 2100 around the themes of coal-to-products; coal energy with capture and storage and a bioindustry/renewable scenario with no coal usage. Life cycle thinking was used to assess environmental, social and property rights issues.

Sustainable cities and urban water planning and management

- **The Things Network: Sydney Community IoT Hub** Together with KEI and Meshed, UTS launched the community-based internet of things network in Sydney, allowing LoRaWAN sensors to freely connect to the internet and improve data, information and connectivity on the health of the city.
- **ARC Linkage Automated event recognition:** This project is developing an algorithm and software environment to automate the recognition of end-use events drawing on high-frequency readings from specialised water meters. The result will enable lower cost smart waster metering deployment at scale and is being led by Griffith with Cisco and Melbourne water retailers.
- **ARC Linkage Smart metering:** Together with MidCoast Water and Griffith University, this project tested the impact of providing groups of householders with either (i) periodic water-use information disaggregated down to end-use level such as gardening, showers, clothes washing etc (ii) real-time aggregated water use information where customers could log on through a dedicated portal. Both options saved water through raising customer awareness of usage and led, in some cases, to the installation of water efficient devices.
- **NCEDA Desalination in supply networks, the bigger picture:** Supporting Deakin and Griffith Universities, the UTS component of this project undertook system dynamics modelling in Sydney to explore the role of desalination in network system optimisation, including scenarios which see reduced dam levels offering capacity to mitigate flooding during heavy rain combined with increased operation of desalination to maintain water security without the immediate cost impost of raising the height of Warragamba Dam.
- **NSW Cabinet Office: Review of Sydney's Metropolitan Water Plan.** Together with ACIL Tasman and SMEC, this project reviewed the water availability and cost effectiveness of supply options and demand management strategies in greater Sydney for the next 25 years. An adaptive management approach was proposed to respond to drought and future growth in water demand together with recommendations on future institutional arrangements

RECENT PUBLICATIONS

- Liu, A., **Giurco, D.** & Mukheibir, P. 2016, 'Urban water conservation through customised water and end-use information', *Journal of Cleaner Production*, 112: 3164-3175.
- Fry, J., Lenzen, M., **Giurco, D.** & Pauliuk, S. 2016, 'An Australian Multi-Regional Waste Supply-Use Framework', *Journal of Industrial Ecology* (in press)
- McLellan, B., Yamasue, E., Tezuka, T., Corder, G., Golev, A. & **Giurco, D.** 2016, 'Critical Minerals and Energy—Impacts and Limitations of Moving to Unconventional Resources', *Resources*, 5(2):19.
- Sahin, O., Stewart, R.A., **Giurco, D.** & Porter, M.G. 2016, 'Renewable hydropower generation as a co-benefit of balanced urban water portfolio management and flood risk mitigation', *Renewable and Sustainable Energy Reviews* (in press)
- Giurco, D.**, Teske, S., Fam, D.M. & Florin, N. 2016, 'Energy-mineral Nexus: Tensions between Integration and Reconfiguration', *Journal for Japan Society of Energy and Resources*, 37
- Golev, A., Corder, G.D. & **Giurco, D.** 2015, 'Barriers to Industrial Symbiosis: Insights from the Use of a Maturity Grid', *Journal of Industrial Ecology*, 19, no. 1.
- Mohr, S.H., Wang, J., Ellem, G., Ward, J. & **Giurco, D.** 2015, 'Projection of world fossil fuels by country', *Fuel*, 141:120-135.