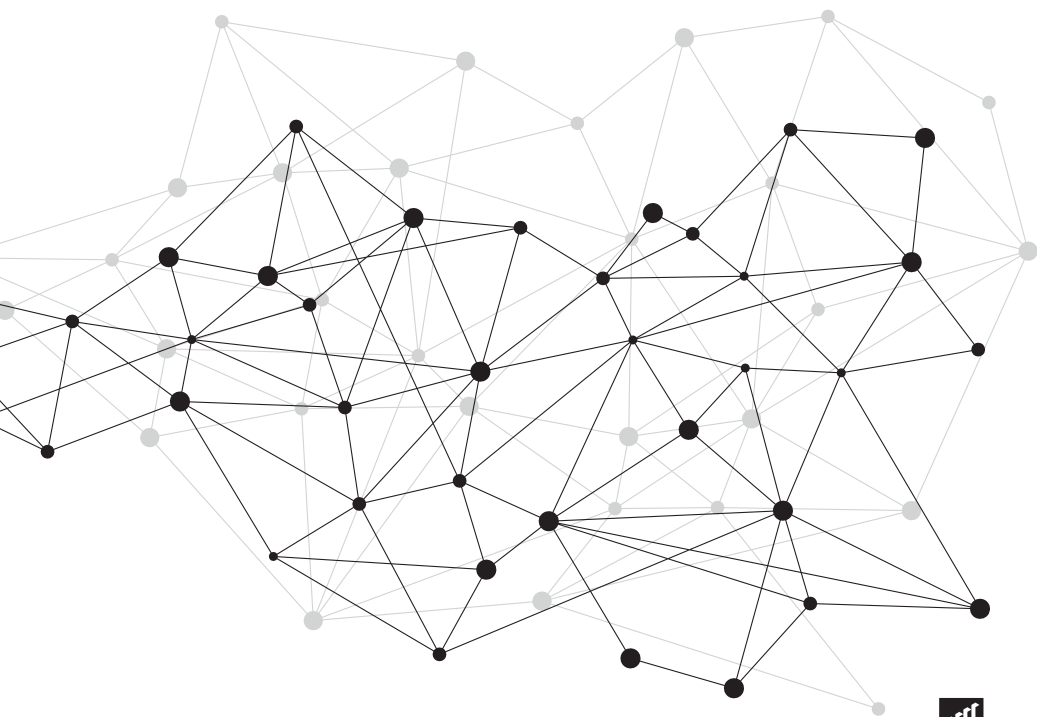


The Transparency Project

Seminar: Everyday products,
consumer knowledge and
environmental impacts

20 –21 February 2020

University of South Australia



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*Hosted by the China Australia Centre for
Sustainable Development*



**University of
South Australia**

The Transparency Project Seminar: Everyday products, consumer knowledge and environmental impacts

Program Design: Aaron Davis, Åsa Jonasson, Natalie McKeon

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Welcome

The idea of ‘enabling sustainable consumption and production’ (from the UN’s Sustainable Development Goal 12) presents us with a unique challenge to the way we now live, what we eat, consume and use on a day to day basis. But it also presents us with an extraordinary opportunity. For recent research shows that around 65% of emissions derive from household consumption, not to mention over half of all land, water and material usage. Reducing the impacts of consumption could thus dramatically affect our environmental crisis in a positive way. In fact, it is one of the few areas governments and businesses have not yet attempted to consider, perhaps out of a general concern that reducing consumption might damage the economy in some way.

Another important reason so little has been done about consumption is that most consumers now have very little information on the environmental impacts of the products and services they use each day. From cars and phones to furniture, appliances and packaged foods, most products and services are understood and compared in terms of advertised claims, with their environmental impacts still largely hidden. We are literally blind to our impacts when we shop, have a shower, get in the car, or eat a meal, and it seems not too many businesses or government agencies are particularly interested in helping us find out. On the plus side, however, there is growing evidence to suggest that when we are made aware of an environmental problem (as evidenced by research following the ABC’s War on Waste TV series), we are more likely to accept positive regulatory change (such as bans on plastic bags).

Given recent rapid advancements in material and energy assessment, sensing and communication technologies, there are few reasons now why impact information cannot be presented to consumers and other actors in the market in a more accessible form. Whether this means environmental labelling, or online blockchain-backed information on resource, energy and water use, there are now many ways we could increase the transparency and traceability of our products and services. Policy makers, designers, producers, retailers and waste managers would also benefit from access to more reliable environmental information.

We would like to welcome you all to the Transparency Project Seminar, to share with us your expertise and insights, especially those of you who have come furthest, including our eminent keynotes. We would especially like to thank Green Industries SA, the Australian Packaging Covenant, Planex and Good Design Australia for their support, and willingness to come and engage with us on this important topic. We would also like to thank our partners from Tianjin University’s China Australia Centre of Sustainable Development – who would have liked to come – for their ongoing commitment to our shared research and educational goals, of which this seminar is an important expression.



#TransparencyProject

Acknowledgment of Country

We acknowledge this land that we meet on today is the traditional lands for Kurna people and that we respect their spiritual relationship with their country. We also acknowledge the Kurna people as the custodians of the Adelaide region and that their cultural and heritage beliefs are still as important to the living Kurna people today. We also pay respects to the cultural authority of Aboriginal people visiting or attending from other areas of South Australia or Australia present here.

Contents

Welcome	1
Acknowledgment of Country	2
Seminar Agenda	4
Keynote Presentations	7
Professor Veena Sahajwalla	8
Brooke Donnelly	10
Professor Robert Costanza	12
Dr Brandon Gien	14
Dr Robert Gianello	16
Vaughan Levitzke	18
Parallel Presentations	21
Genevieve Cother	22
Dr Robert Crocker	24
Dr Aaron Davis	26
Dr Zoe Doubleday	28
John Gertsakis and Rose Read	30
Charles Ling	32
Dr Li Meng	34
Dr Ian Overton	36
Anthony Peyton	38
Janet Salem	40
Niki Wallace	42
Professor Eileen Webb	44
Sponsors and Acknowledgments	47
Networking list	48

Seminar Agenda

Day 1: Thursday 20 February 2020

*Bradley Forum, Hawke Building, Level 5
University of South Australia City West Campus*

- 3.00pm Registration
- 3.30pm The Transparency Project
Robert Crocker and Martin Shanahan, UniSA
- 3.45pm Welcome
Marnie Warrington-Hughes, UniSA
- 4.00pm Keynote (Research)
Veena Sahajwalla, UNSW
- 5.00pm Keynote (Industry)
Brooke Donnelly, Australian Packaging Covenant Organisation
- 6.00pm Opening event
- 7.30pm Close

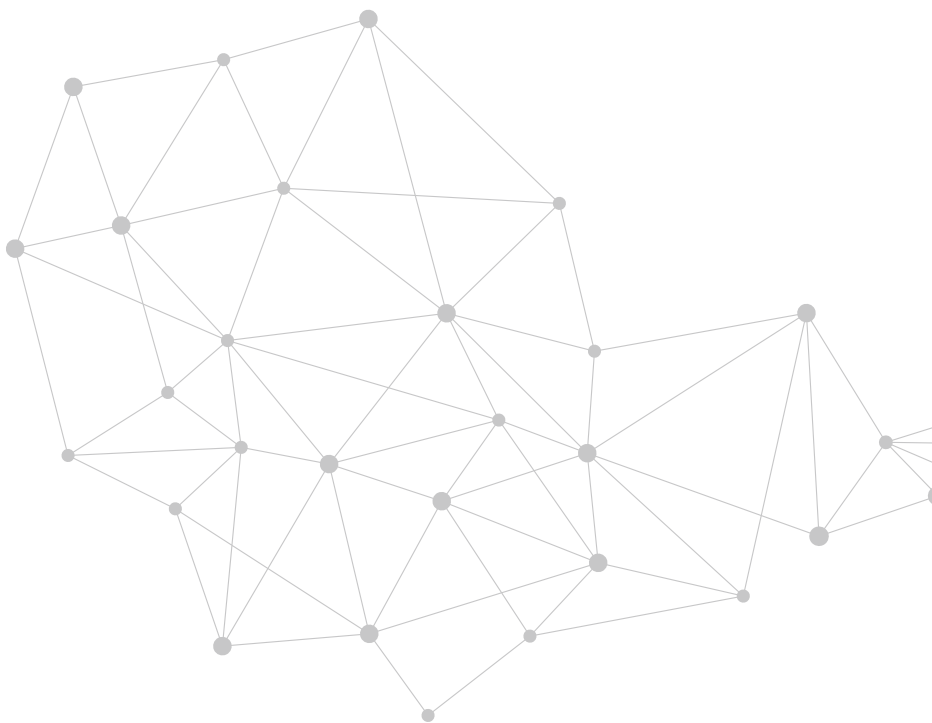
Day 2: Friday 21 February 2020

Plenary Sessions: Bradley Forum, Hawke Building, Level 5

Parallel Sessions: Hawke Building, Level 6

University of South Australia City West Campus

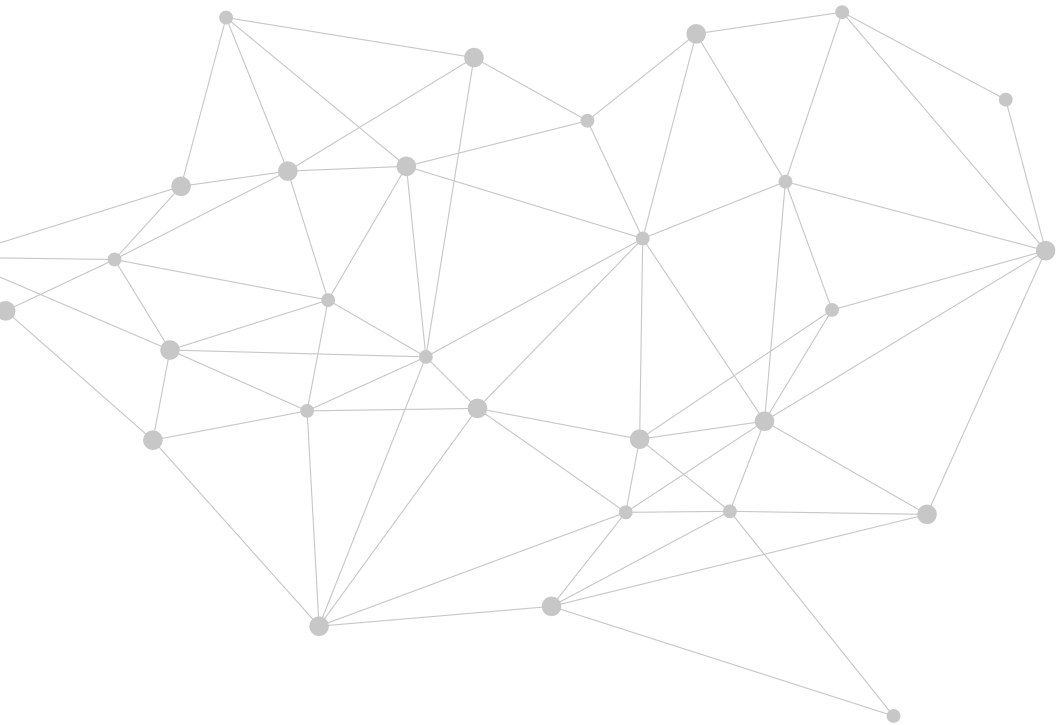
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| 8.30am | Registration |
| 9.00am | Keynote (Research)
Robert Costanza, ANU |
| 10.00am | Morning Tea |
| 10.30am | Parallel Sessions
(please see separate sheet for program) |
| 12.30pm | Lunch |
| 1.30pm | Keynote (Industry)
Brandon Gien, Good Design Australia |
| 2.30pm | Keynote (Industry)
Robert Gianello, Planex |
| 3.30pm | Afternoon Tea |
| 4.00pm | Panel session
Moderator: Robert Crocker |
| 5.00pm | Keynote (Industry) & Closing Speech
Vaughan Levitzke, Green Industries SA |
| 6.00pm | Close |



Keynote Presentations

Speaker Biographies

Professor Veena Sahajwalla	8
Brooke Donnelly	10
Professor Robert Costanza	12
Dr Brandon Gien	14
Dr Robert Gianello	16
Vaughan Levitzke	18



Microfactories™: Our Secret Weapon in the War on Waste

Professor Veena Sahajwalla FAA FTSE HonFIEAust CPEng

University of New South Wales

Australian Research Council (ARC) Laureate Professor Veena Sahajwalla is an internationally recognised materials scientist, engineer and inventor revolutionising recycling science. She is renowned for pioneering the high temperature transformation of waste in the production of a new generation of ‘green materials.’ In 2018 Veena launched the world’s first e-waste microfactory and in 2019 she launched her plastics microfactory, a recycling technology breakthrough. As the founding Director of the Centre for Sustainable Materials Research and Technology (SMaRT) at the University of New South Wales, Sydney, she is producing a new generation of green materials and products made entirely, or primarily, from waste. Veena also heads the ARC Industrial Transformation Research Hub for ‘green manufacturing’, a leading national research centre that works in collaboration with industry to ensure new recycling science is translated into real world environmental and economic benefits. In 2019 she was appointed inaugural Director of the Circular Economy Innovation Network by the NSW Government through its Office of Chief Scientist and Engineer. In 2019, she was honoured by Engineers Australia as a Centenary Hero for her work (<https://www.createdigital.org.au/meet-engineer-helping-people-see-huge-possibilities-circular-economy/>). In 2018 she was elected as Fellow of the Australian Academy of Science. In 2016, Veena was named one of Australia’s Most Innovative Engineers and in 2015, Veena named Australia’s 100 Most Influential Engineers, both by Engineers Australia. In 2013, Veena received the ‘Howe Memorial Lecture Award’, Pittsburgh, USA in appreciation for her lecture on ‘The Power of Steelmaking – harnessing high temperature reactions to transform waste into raw material resources’.

Presentation Summary

Veena will be discussing the roll out of safe, cost-effective ‘waste to value’ solutions via her unique microfactory concept, which brings the solution to the (waste) problem for the first time. In future, these decentralised microfactories will enable big and small operators to produce many of the products, materials and resources they need locally, using resources largely derived from waste. This new approach promises to disrupt today’s highly centralised, vertically integrated industrial model and its mass global markets, as agile, scale technologies drive the decentralisation of manufacturing, with positive economic and social impacts.

Notes

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Working towards reducing the environmental impact of packaging in Australia

Brooke Donnelly

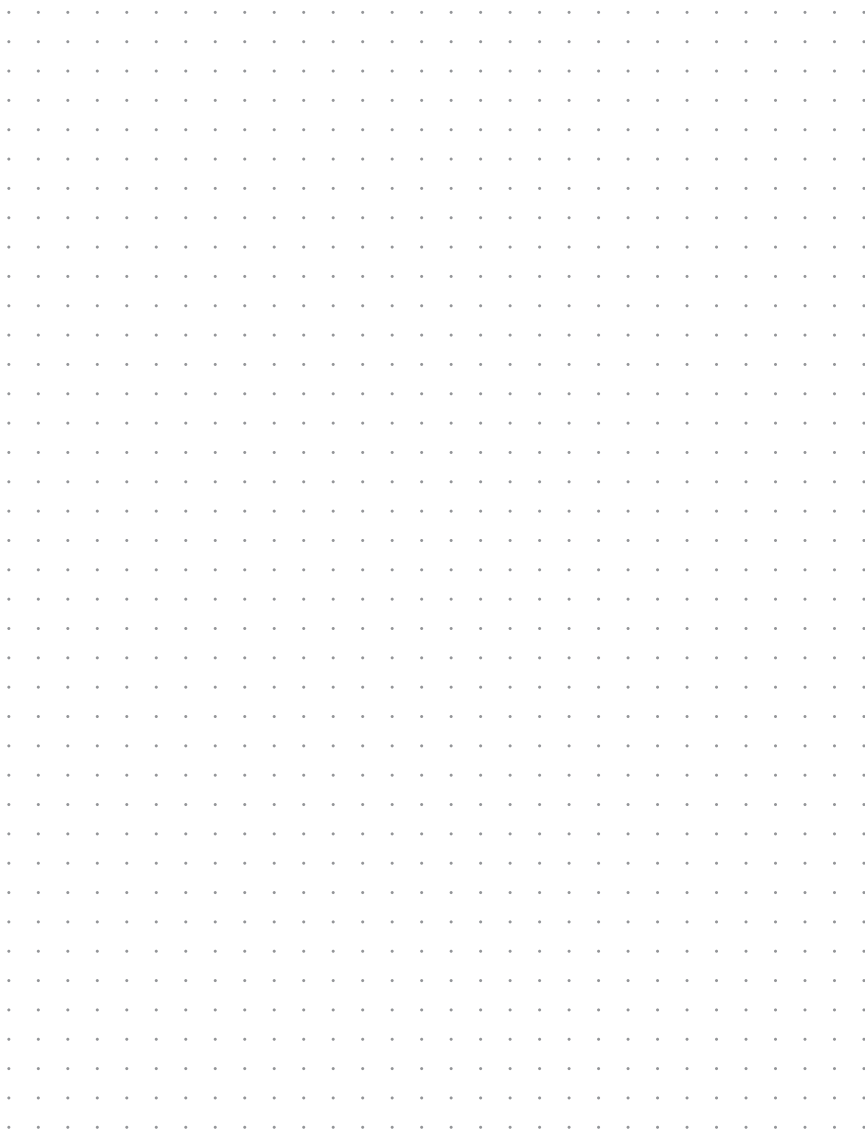
CEO, Australian Packaging Covenant Organisation

Brooke Donnelly has spent her career working in product stewardship, recycling and sustainability, spending her formative years managing her third-generation family business, specialising in the recycling of industrial packaging. In her current role of CEO at the Australian Packaging Covenant Organisation (APCO) Brooke develops and leads APCO's strategic direction and vision. APCO enables businesses, government and industry to design and utilise more sustainable packaging throughout the supply chain to reduce the environmental impact on Australian communities. Brooke is also the co-founder of the Product Stewardship Cluster, a voluntary group working to accelerate Australia's journey to a circular economy through product stewardship.

Presentation Summary

The Australian Packaging Covenant Organisation (APCO) is a not for profit organisation working to reduce the harmful environmental impacts of packaging on Australian communities. In 2018 APCO was charged by government to deliver the new National Packaging Targets and make all packaging reusable, recyclable or compostable by 2025. To achieve this goal, APCO works closely with government and industry to deliver a range of sustainable packaging initiatives, including design, recycling, waste to landfill reduction and circular economy projects. Recognised as one of Australia's leading product stewardship organisations with a strong national and global collaborative network, APCO is committed championing sustainable, environmentally friendly packaging solutions and building a circular economy in Australia. In partnership with Planet Ark and PREP Design, APCO developed the Australasian Recycling Label, a new evidence-based recycling system to take the confusion out of recycling and give Australians the confidence to start recycling right.

Notes

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The True Costs of Production and Consumption

Professor Robert Costanza

Australian National University

Robert Costanza is a professor of Ecological Economics and Vice Chancellor's Chair in Public Policy at the Crawford School of Public Policy at the Australian National University. He is also currently a Senior Research Fellow at the Stockholm Resilience Center, an Affiliate Fellow at the Gund Institute for Ecological Economics, a deTao Master of Ecological Economics at the deTao Masters Academy, China, a Fellow of the Royal Society of Arts (UK), and an Ambassador of the Wellbeing Economy Alliance (WEAll). Professor Costanza's transdisciplinary research integrates the study of humans and the rest of nature to address research, policy and management issues at multiple time and space scales, from small watersheds to the global system. He is co-founder and past-president of the International Society for Ecological Economics, and founding editor of the society's journal, Ecological Economics. He currently serves on the editorial board of ten other international academic journals. He is also founding editor of Solutions a unique hybrid academic/popular journal and editor in chief of The Anthropocene Review. Professor Costanza is the author or co-author of over 600 scientific papers and 27 books. His work has been cited more than 97,000 times in Google Scholar with an h-index of 120. More than 300 interviews and reports on his work have appeared in various popular media and he has written over 70 articles for the popular press.

Presentation Summary

In the current Anthropocene epoch, human economies and societies are increasingly interconnected and interdependent with the rest of nature. It is essential that we better understand and model these interdependencies if we hope to create a sustainable and desirable future. One approach to this is full cost accounting, which attempts to estimate the true costs of production and consumption, including long term environmental and social costs, and use this information to inform and modify behaviour at the individual, firm, and societal levels. This talk discusses methods to estimate true costs, including input-output analysis, life cycle assessment, and dynamic systems modelling. It also discusses methods to use this information including labelling, taxes, environmental profit and loss statements, banks and insurance, and investment funds. Greater transparency about the true costs of production and consumption can go a long way toward achieving the sustainable and desirable world we all want.

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The Greatest Design Challenge Of Our Time

Associate Professor Brandon Gien

CEO, Good Design Australia

Brandon is the CEO of Good Design Australia and Chair of Australia's annual Good Design Awards – the longest-running international design awards program in Australia with its origins dating back to the Industrial Design Council of Australia in 1958. He has spent the last 25 years passionately advocating for the value of design to improve our social, economic, cultural and environmental quality of life. In 2015, Brandon was inaugurated as a Senator of the World Design Organization (WDO), the global body for Industrial Design after serving as a member of the Board of Directors and finally as WDO President, the first Australian to hold this position.

He is a qualified Industrial Designer and gained his PhD in Environmental Design from the University of Canberra's School of Design and Architecture. Brandon is an Adjunct Professor of Industrial Design at both the University of Canberra and the University of New South Wales (UNSW) and co-host of popular TV series, Australia by Design on Channel 10 and Network ONE.

Presentation Summary

There is no doubt that we are transitioning to a world that is set to experience exponential advancements in science and technology while on the other hand, one that continues to grapple with big issues such as climate change and inequality, to name but a few. The relevance of applying a design mindset to these challenges is now more critical than ever. A mindset that will allow us to imagine a better, brighter and more sustainable future and one that provides a framework to design our way towards it in the most sensitive, efficient and practical manner possible.

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Waste Powder Coat Powder: Diversion from landfill to the circular economy

Dr Robert Gianello

Research Manager, Planex

Robert Gianello is Research Manager at Planex, a manufacturer of adaptive steel products for the workplace. His passion is for science and he is committed to working towards sustainability both personally and for our planet.

After completing his PhD at Monash University he pursued an academic career in the area of medicine, however in 2016, changed direction to work at Planex to help increase the sustainable initiatives of the company. During the past four years he has forged a collaboration with Sustainability Victoria and to date he has been instrumental in lowering gas emissions from the ovens at Planex by 15%, reducing waste of all paper, cardboard, steel, plastics and soft film waste by 95% and has helped devise a process to re-use residual powder coat that now achieves an annual 30-tonne saving in green house gas emissions. He has also instigated investigation into further reduction of powder coat waste and leads an industry group formed by Planex into further research at Monash University.

Presentation Summary

Powder coating is a type of coating that is applied to manufactured products such as steel or aluminium furniture, window frames and building panels and roofing. Unlike conventional liquid paints, it is sprayed on as a powder and then cured with heat to give a tough durable finish. The powder is made of polymer (e.g., polyester) and minerals and coloured pigments.

Spraying the powder onto target surfaces gives over-spray (the target is missed) and a portion of this cannot be used so it is wasted. The waste goes to landfill either as the powder, or as solidified clumps, or it can be incinerated at high temperature. The first option is cheapest; last 2 options are relatively very expensive.

Planex views the waste powder as a ready-made microplastic. Estimates of the waste powder going to landfill in Australia are 3,500 t/year, and may exceed 100,000 t/year worldwide. If and how it is contained within landfill sites is unknown.

Planex decided to divert 2/3 of its waste powder from landfill by using it to make counterweights for its furniture. We are pursuing a solution for the last 1/3 of the waste powder. Our work aims to bring attention to an unspoken side of powder coating, and explore solutions for the industry. Instead of landfill it could go to the circular economy with benefits including recovery of monomers, fuel, minerals and importantly, not dumping microplastics to landfill.

Notes

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Recyclable, clean and green,
biodegradable, sustainably sourced,
environmentally friendly, and consumes
no oxygen

Vaughan Levitzke

Green Industries South Australia

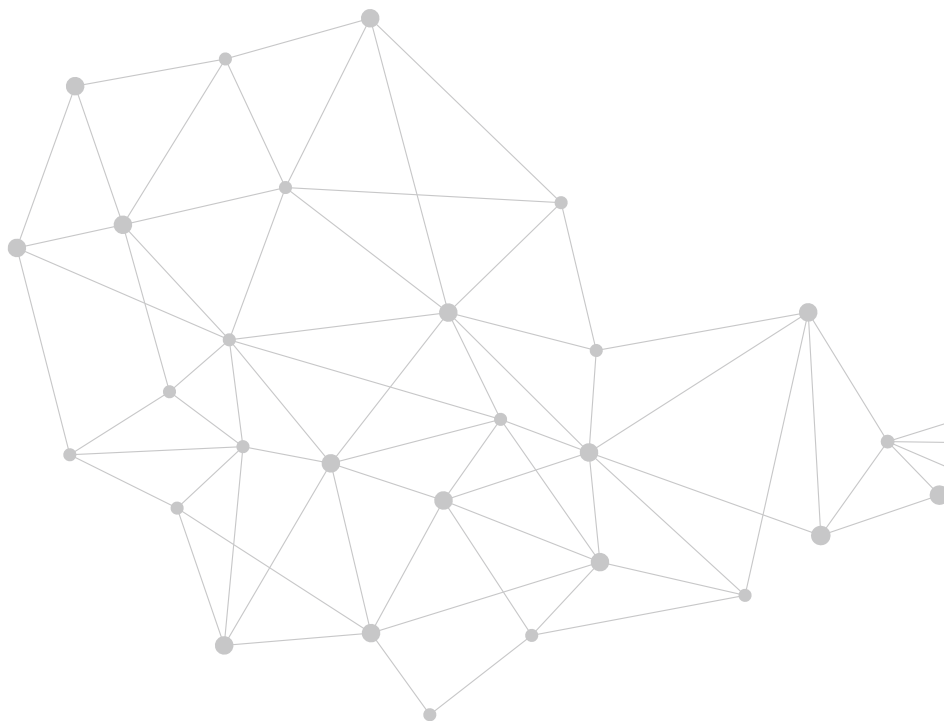
Vaughan has more than 35 years' experience in government, project management and leadership. He established Zero Waste SA in 2003 and is responsible for a multitude of programs and projects carried out by Zero Waste SA and its partner organisations and now Green Industries SA, that has seen South Australia establish its leadership credentials in waste management and recycling and the Circular Economy in Australia and internationally. Vaughan spent 10 years with the South Australian EPA in a number of roles, including regulation of tyres, and composting, overseeing and expanding container deposit legislation, and industry resource efficiency programs. In 2015 he received a Public Service Medal for outstanding public service in the area of waste management reform and policy.

Presentation Summary

'Greenwash' is a common term used to describe many false claims, however these claims extend far beyond the environmental performance of a product or service. The world of advertising and marketing has provided us with the amazing perception that not only are we as individuals and as groups of people, not beautiful enough, unable, poorly educated, lack the necessary equipment, are underwhelming and generally poorly prepared for anything, it has the capability through products and experiences to fix these problems, and also make us and even our pets feel (much) better. How is it that we find ourselves here? Is any of this actually true? Does it stand up to scrutiny, and most of all, what can government do about it?

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Parallel Presentation Sessions

Presenting Authors

Genevieve Cother	22
Dr Robert Crocker	24
Dr Aaron Davis	26
Dr Zoe Doubleday	28
Rose Read	30
Charles Ling	32
Dr Li Meng	34
Dr Ian Overton	36
Anthony Peyton	38
Janet Salem	40
Niki Wallace	42
Professor Eileen Webb	44



What SME manufacturers want: communicating environmental impacts to non-specialist product designers

Genevieve Cother

Business Development Manager, The Action Learning Institute

This paper explores the needs of small to medium enterprises (SMEs) competing in local and global markets, for relevant information to inform design decisions for their product/service systems. A recent action learning program, delivered in Tasmania, provided insight into a diverse range of businesses and their product design processes. Participants expressed frustration about the lack of information available about materials (including imported subassemblies/components and associated packaging), their environmental impacts, and potential end-of-life scenarios. Three case studies examine and compare the current situation in diverse businesses, and more generally in each industry represented; a poultry farm and processing facility, an agri-tourism business manufacturing proprietary souvenirs, and a visual management business manufacturing and installing signage. Each business takes a different approach to product and service design, with little specialist knowledge or experience of sustainable production. Direct feedback on the potential effects of greater transparency of the environmental impacts of consumer products, across local and global supply chains, is presented and discussed. Recommendations to support non-specialist designers in SME manufacturing companies to pursue sustainable production are put forward.

Presenter Biography

Genevieve is the Business Development Manager for The Action Learning Institute (ALI), a private research and training organisation and Ed-Tech StartUp. ALI is a global leader in education transformation; it is the first education institution in the world to deliver nationally recognised qualifications, entirely through action learning. An industrial designer, with a Master's degree in Sustainable Design from the University of South Australia, Genevieve has been instrumental in establishing Business Action Learning Tasmania (BALT) Ltd, an industry-based action learning cluster centred around the Tamar Valley region in Tasmania. In 2019, Genevieve designed and facilitated the BALT Business Resource Efficiency Program (BREP), an action learning program delivered by BALT in partnership with the Tasmanian government, to assist small and medium-sized businesses to reduce their emissions and costs. The Business Resource Efficiency Program was delivered by Business Action Learning Tasmania (BALT), in partnership with the Tasmanian government.

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Transparency and the Paradox of Growth

Robert Crocker, DPhil (oxon)

Deputy Director, China – Australia Centre for Sustainable Development. Senior Lecturer, School of Art, Architecture and Design, University of South Australia

As a number of commentators have noted, large corporations now play a disproportionate role in determining the consumption of resources and energy required for the production of goods for consumption. They lead the pack in terms of shaping markets and their environmental and social impacts. Many of these companies are now trying to reduce the environmental impacts of their products but will simultaneously announce plans to expand and grow their business, often in different reports. This somewhat paradoxical stance is often assumed to be a form of greenwashing. However, it mirrors a global version of the Jevons 'paradox', where particular products might become more eco-efficient and less 'carbon intensive', while increases in the consumption of these same products will still be occurring. For example, an airline might achieve a 1% reduction in their environmental impact over one year whilst increasing the sale of seats on their planes by 4% over the same period. As this suggests, the global footprint of most companies' activities is rarely mapped and understood by their stakeholders, and even more rarely by their customers. Not surprisingly, corporate commitments to transparency tend to be limited to what can be announced without shame. In this presentation the role of greater transparency in cutting through the shame barrier and embracing innovation towards more sustainable outcomes will be reviewed. An attempt will also be made here to describe the inherent synergies between greater transparency and the development of both the circular economy and the more likely achievement of SDG 12, 'enabling patterns of sustainable production and consumption'. It is argued here that transparency can thus play a critical role in reducing both environmentally damaging growth and global emissions.

Presenter Biography

Robert Crocker, DPhil (oxon), is Deputy Director of the China Australia Centre for Sustainable Development and a Senior Lecturer in the University of South Australia's Art, Architecture and Design School. With a background in the history of science and philosophy, his research focuses on the relationship between consumption, waste, and design for sustainability. His book *Somebody Else's Problem: Consumerism, Design and Sustainability* (Greenleaf 2016), won gold in the Axiom Best Business Books for 2017 (sustainability), and he is co-editor of four published collections of essays, including most recently *Subverting Consumerism: Reuse in an Accelerated World* (Routledge 2018) and *Unmaking Waste: Towards a Circular Economy* (Emerald 2018). He has convened four international colloquia on various themes in design and consumption and 'unmaking waste' over the last 5 years.

Notes

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Blockchain-based transparency in the building industry: A potential symbiosis between BIM, LCA and DLT

Dr Aaron Davis and Professor Ning Gu

University of South Australia

The construction of new buildings is responsible for 6.3% of global greenhouse gas emissions each year (IPCC 2014) yet finding accurate information about the environmental impact of construction materials can be difficult. One way of better understanding these impacts is through the integration of this data into the Building Information Model (BIM) processes (McGraw Hill 2014). A BIM includes spatial dimensions, as well as data about time, cost, operations and sustainability (Kirkham 2015). One of the key challenges in incorporating sustainability information into BIM-based processes is sourcing data that has not been aggregated at a regional or national level (Sen, Ongsakul & Popoon 2018). Blockchain provides an opportunity to shift the management of this data from centralised databases to individual chains of custody that more accurately capture and reflect environmental consequences (Sen, Ongsakul & Popoon 2018). However, the extent to which it is possible to integrate these approaches into current BIM-based construction management processes is not clear. To this end, this paper presents the results of a systematic review that analyses the extent to which blockchain has been described in relation to BIM literature and finds significant gaps in our current knowledge about how this may take place.

Presenter Biography

Aaron Davis recently completed his PhD in Architecture at the University of South Australia with funding from the Cooperating Research Centre for Low Carbon Living. His thesis explored the role of living laboratories in end-user engagement on architectural projects. Aaron has experience working on a range of projects relating to the Architecture, Engineering and Construction (AEC) industry, including investigating the adoption of Building Information Modelling (BIM) in the timber supply chain, and more recently, an ARC funded project that is investigating digital collaboration in the construction industry.

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Establishing a global framework to trace the provenance of seafood and combat fraud – can we do it?

Dr Zoe Doubleday

Future ARC Fellow, University of South Australia

The UN's Food and Agricultural Organisation has flagged that global demand for food is set to increase by 70% over the next 30 year. Yet, diminishing supplies of fresh water and arable land mean that agriculture is unlikely to meet this entire need. One possible solution, which particularly answers to the critical need for protein, can come from seafood. The FAO states that we are more reliant on seafood than ever before, consuming twice as much seafood as we did 50 years ago, a rate of increase that is outstripping demand for beef. However, 90% of the world's fisheries are either overfished or have reached maximum capacity. This threat to fisheries sustainability, and the resulting shortage of seafood, can be inextricably linked to tracing the provenance of seafood. Tracing provenance empowers authorities to combat seafood fraud, which allows illegal and unsustainable fishing activities to go unchecked. I will seek to address this global challenge in my new Future Fellowship project. In doing so, I will combine fundamental disciplines (ecology, geochemistry) with solution-driven disciplines (seafood forensics) and attempt to create powerful, universal markers of seafood provenance, which are based on the intrinsic chemical properties of the animal.

Presenter Biography

I am a marine biologist, ecologist and passionate advocate for accessible science (see personal website and Google Scholar for more details). My current research areas include: using biominerals and geochemical tools to unlock the biological histories of aquatic animals; helping the fishing industry to adapt to environmental change; and, understanding how rapid environmental change and human activities affect marine communities. I also investigate how to boost the readability and readership of what scientists write, particularly peer-reviewed publications. My goal is to not only boost public engagement in science, but also boost collaboration within the STEM community. I also work regularly with the media to promote diversity in STEM, marine research and the environment.

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Next Level Policy Shifts to Address Electronic Waste in Australia

Rose Read and John Gertsakis

Directors and Co-Founders, Ewaste Watch Institute

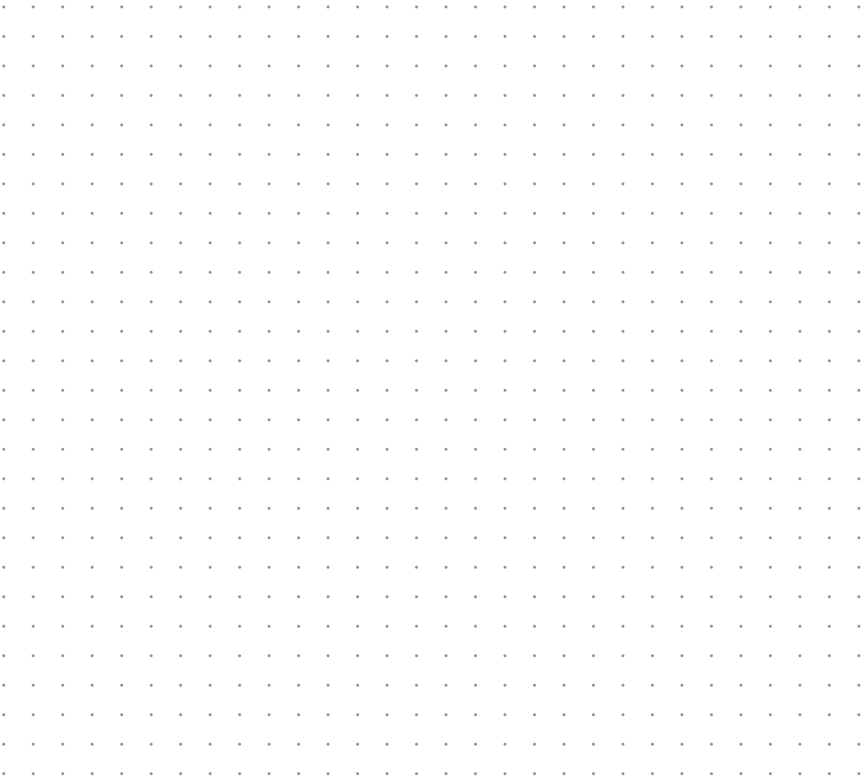
A bold and informed approach is required to adequately address the generation of waste associated with consumer products, including specific attention to electrical and electronic goods. As the fastest growing waste stream in the world, Ewaste Watch is seeking to accelerate electronics sustainability by way of informing, educating, engaging and activating key stakeholders to achieve next level change through more circular thinking and action. This paper will focus on the importance of policy and regulation that is required to enable more substantial shifts to circular electronics with a focus on new design thinking, the significance of reuse, repair and product life extension, and the mainstreaming of alternative business models that give practical effect to the sharing economy and dematerialisation. We will discuss these issues within a global context and SDG 12, but also propose specific settings to enable Australia to transition to increased levels of transparency directly associated with the policy and regulatory reforms needed at a Commonwealth and State level. The audience for this paper would include policy and law-makers in government, decision-makers in business and industry, as well as research academics with an interest in environmental policy, the circular economy and electronics design and sustainability. Our essential proposition is focused on strengthening the design of policies and legislation that can drive next level change through Extended Producer Responsibility for all electrical and electronics products including batteries, and the Tsunami of Internet of Things devices destined to create a new version of 'waste in transit' or 'Ewaste 2.0'.

Presenter Biographies

Rose Read thrives on delivering practical sustainability solutions in collaboration with industry, government and the community. She has worked extensively in electronics product stewardship, successfully implementing MobileMuster – Australia's leading mobile phone recycling program over a ten-year period. Rose also headed-up MRI PSO Pty Ltd, an approved co-regulatory arrangement under the National Television and Computer Recycling Scheme. In August 2018 she commenced as CEO of the National Waste and Recycling Industry Council. Rose also holds the title of Adjunct Professor with the Institute for Sustainable Futures at the University of Technology, Sydney.

John Gertsakis is focused on reform and positive disruption. He is a sustainability practitioner with experience as an industry adviser, consultant, advocate and research academic. He is director and co-founder of the Ewaste Watch Institute, and he co-authored Australia's first report on e-waste recycling in 1995 titled: Short Circuiting Waste from Electronic Products. He served as Executive Director of Product Stewardship Australia from 2006 to 2011 representing global consumer electronics brands in the design of Australia's Product Stewardship Act and the National Television and Computer Recycling Scheme. John is also Director of Communications with Equilibrium consultants, and Adjunct Professor with the Institute for Sustainable Futures at the University

of Technology Sydney. John has written and presented widely on sustainable product design, electronic waste and the role of product stewardship and producer responsibility in driving circular solutions. He is an Honorary Fellow of the Design Institute of Australia. John lives in the heart of the Victorian Alps and is a keen backcountry skier, bushwalker and photographer.



Modelling the carbon footprints of food waste diversion options in Melbourne, Australia

Charles Ling

*PhD Candidate, School of IT and Mathematical Sciences,
University of South Australia*

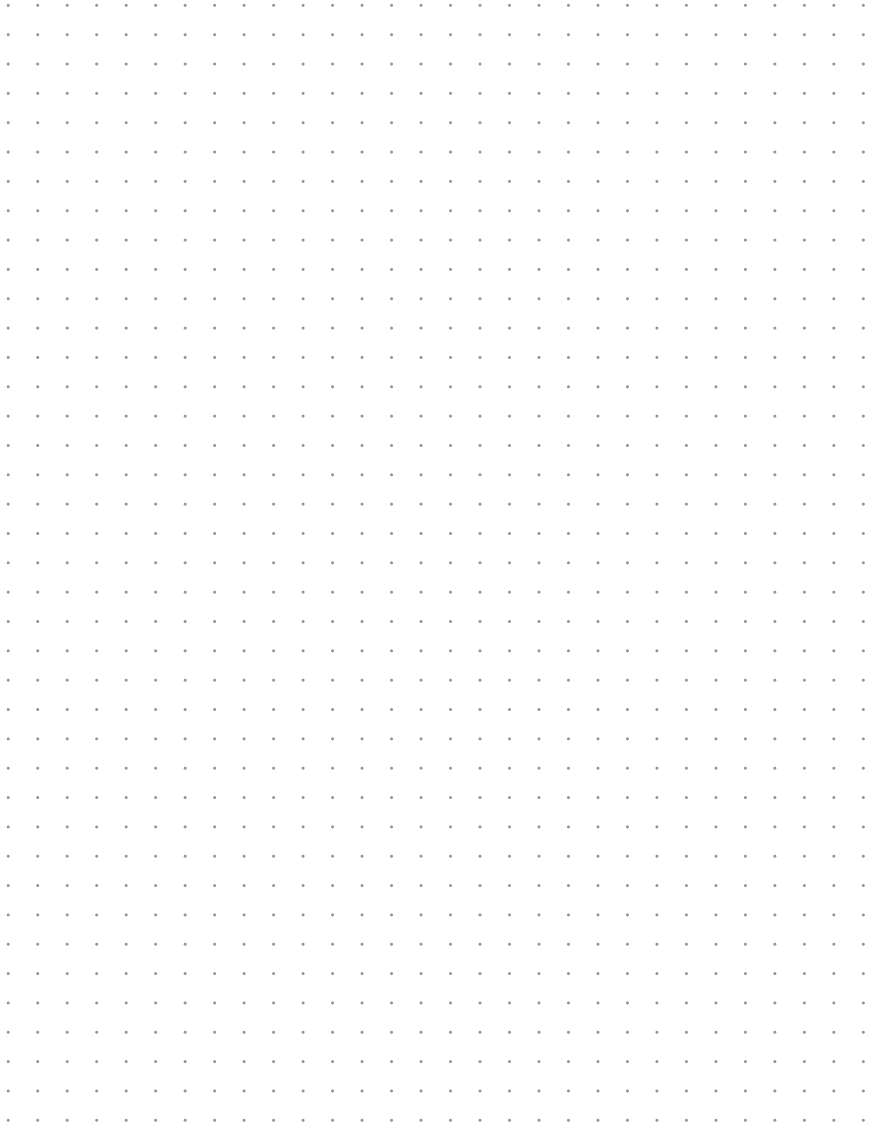
It has been estimated that 7.3 million tonnes of food waste were generated in Australia in 2016/17 with over 44% of it going to landfill where it creates methane, a potent greenhouse gas. In 2017, all governments in Australia adopted the National Food Waste Strategy committing them to reduce Australia's food waste by 50% by 2030 in line with the UN's Sustainability Development Goal 12.3. While government, industry and the general community are seeking to address the vexed problem of food waste, there is a general lack of consumer knowledge amongst policy-makers and waste managers to how best to compare the options to prevent avoidable food waste or to divert unavoidable food waste from landfill on a carbon-reduction basis.

As part of the CRC for Low Carbon Living Food Waste project, a carbon footprint tool is being developed to give food waste stakeholders in the commercial kitchen space, more consumer knowledge to identify the least-carbon options to diverting their food waste from landfill. The tool includes a range of carbon burdens such as transport, operational and biological emissions and carbon benefits such as renewable energy, carbon sequestration and avoided production.

Presenter Biography

Charles Ling is a PhD Candidate at the School of IT and Mathematical Sciences at the University of South Australia. Part-funded by the CRC for Low Carbon Living, he has been involved with the CRCLCL Food Waste Project at Swinburne University quantifying the carbon reduction from diverting commercial food waste from landfill. Charles is an environmental engineer with experience in both, composting research and quantifying energy/carbon footprints for commercial buildings.

Notes

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Consumer Preferences and Farmers' Sustainable Growth: Sustainable indicators and measurements

Dr Li Meng

Research Fellow, University of South Australia

The food industry consists of multiple players such as farmers, suppliers, manufacturers, packagers, transporters, exporters, wholesalers, retailers and consumers with varying interests, cultural attitudes and dimensions. Sustainable food is generally defined as a fair price for the agriculture producer and an affordable price for the consumer, produced through the sustainable use and management of natural resources, providing an appropriate livestock living environment and the quality of life for humans while also integrating the priorities of agriculture and the needs of citizens. Information on the sustainability of foods is important to be transferred from growers to consumers in food purchasing. This paper reviews past and present literature to illustrate what is perceived as a sustainable food label by consumers and how that can be measured and controlled by the farmers. The results found there lack comprehensive and measurable benchmarking for sustainable food labels, especially in regard to sociodemographic and cultural differences in preferences and operational feasibility for farmers and processors. These imply more research is needed to focus on quantifiable food labels which show a food's carbon foot print in production, transportation and waste handling that can satisfy consumers information requirements and to improve the sustainable food industry.

Presenter Biography

Dr Li Meng is a Research Fellow in logistics, transport, and Supply Chain Management. Li has previously worked in automotive engineering for 5 years and Supply Chain Management for 5 years both in China and Australia for ZF Chassis. In 2009, Li started her PhD full time in Transport Engineering (by utilising discrete choice models to investigate consumer travel behaviour and demand) which she completed in 2013. Since 2014, Li has been working in research areas of travel behaviour modelling; shared mobility; ecology models; suppression models; supply chain management models and smart urban design in University of South Australia.

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Measuring the Circular Economy – towards company and product metrics to empower consumers

Dr Ian Overton

Deputy Chief Executive, Green Industries SA

A global Circular Economy is a world that creates, distributes, sells, uses and recycles products in a sustainable manner, reducing the reliance on natural resources, reducing environmental impact, using clean renewable energy. A Circular Economy aims to design out waste and pollution while increasing product longevity, and recycling and repurposing resources. The goal of a Circular Economy is to manage production and consumerism for an ecologically sustainable future, but how do consumers know that the products and services they are using make a difference? There are various methods for measuring a Circular Economy but what will empower consumers to make informed choices in the products they purchase? How can Circular Economy metrics support consumer transparency to enable transition to more responsible production and consumption. This presentation reviews current methods of measuring the Circular Economy and considers what is needed in the development of metrics for clarifying the sustainability and environmental impact of companies and products.

Presenter Biography

Dr Ian Overton is the Deputy Chief Executive of Green Industries SA. The lead South Australian Government Agency for growing a Green Economy and keeping South Australia at the forefront of resource recovery innovation. He has over 30 years experience in environmental science, business management, and research, development and commercialisation. He has a keen interest in developing metrics for measuring and driving a Circular Economy for sustainability and economic prosperity. Ian is also an Adjunct Professor at the University of Adelaide and a Councillor of the Royal Geographical Society of South Australia. He has a PhD in Science and a Master's in Business Administration.

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PREP: increasing transparency of packaging recyclability

Anthony Peyton

Founder and Director, PREP Design

The Packaging Recyclability Evaluation Portal (PREP) is the world's first and only packaging design tool that covers all consumer packaging materials and provides designers with immediate feedback on a design's recyclability. PREP reflects the recycling eco-systems in Australia, New Zealand and the United Kingdom and is currently being adapted for the Singapore market. This simulation means that users now do not need to conduct laboratory and recycling centre trials for each new design to know whether it is recyclable; PREP provides the transparency needed to accelerate the design of recyclable packaging, one of the 2025 National Packaging Targets. The basis of PREP's recyclability classification is the ISO 14021 definition, clause 7.4:

- a.) The collection, sorting and delivery systems to transfer the materials from the source to the recycling facility is conveniently available to a reasonable proportion of the purchasers, potential purchasers and users of the product
- b.) The recycling facilities are available to accommodate the collected materials
- c.) The product for which the claim is made is being collected and recycled.

The Australian Packaging Covenant Organisation (APCO) launched the Packaging Recycling Label program in early 2018 with Planet Ark and PREP Design. Since then over 200 businesses have voluntarily joined the program and applied the Australasian Recycling Label (ARL) to the packaging artwork, which is underpinned by the PREP classifications. The purpose of the ARL is to help consumers recycle better, which results in less contamination. Apart from just saying whether packaging is recyclable or not, the ARL also includes consumer instructions for improving recycling performance such as: 'Flatten Box', 'Scrunch foil into ball', or 'Return film to store'. APCO has formed a Technical Advisory Committee, which is responsible for the PREP assessment framework for packaging sold in Australia and New Zealand. This governance arrangement ensures that the PREP increases the transparency over time, including being able to readily adapt to market changes.

Presenter Biography

Anthony Peyton is the founder and Director of PREP Design, the owner of PREP, which helps brands and packaging producers accelerate the design of recyclable packaging. PREP Design is owned jointly by Anthony's environmental consulting firm GreenChip; Planet Ark; and Innovyz and was founded with the support of Green Industries South Australia in 2017. Anthony has been working as an environmental professional for over 30 years having completed a Bachelor of Engineering at the University of Melbourne plus post graduate management studies. He founded GreenChip in 2001 having worked for 12 years with large engineering firms including Golder Associates, Dames & Moore and URS (AECOM). Anthony is passionate about making a global impact on the problems faced by our world including climate change, ocean plastics and resource depletion. He is therefore determined to expand the coverage of the PREP to other nations and thereby help the major brand owners to harmonise packaging design to create a global circular economy.

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Policies towards sustainable lifestyles in Asia

Janet Salem

PhD Candidate, School of Physics, University of Sydney

Governments are including policy goals on sustainable consumption in their development strategies, but how do these goals compare with the impacts of national consumption patterns? The IPCC warns that we are headed to climate collapse if we go beyond a warming of 1.5 degrees. Nature based solutions (eg. reforestation) and technology solutions (eg. low carbon energy) are necessary, but now insufficient to stay within 1.5 degree warming. Sustainable consumption is now an acknowledged part of climate change mitigation strategies, as well as the Sustainable Development Goals. This paper will review policy goals in the world's largest and fastest growing region, Asia and the Pacific, to compare the ambition of sustainable lifestyles policy goals with the per capita carbon and material footprint trends. Carbon and material footprint indicators provide additional transparency to territorial per capita emissions, and provide useful insights into the contributions of lifestyles to global environmental issues, regardless of where the emissions occur in the supply chain. This type of data is generated using multiregional input output tables, such as EORA, developed at the University of Sydney. Potential applications of footprint data to strengthen policy goals and implementation instruments will also be explored.

Presenter Biography

Janet Salem is a PhD student at the University of Sydney's School of Physics. For the last 13 years she has been working with the United Nations on sustainable consumption and production. For five years she worked in the Secretariat of the International Resource Panel, a science-policy interface on natural resource use. For the past seven years she has been providing policy analysis and support to developing countries in Asia and the Pacific. Janet has a Master's degree in Engineering Science and a Bachelor degree in Environmental Engineering.

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Building communities through networks of transparent food systems

Niki Wallace

PhD Candidate (in examination), University of South Australia

As the food system in the Global North is increasingly centralised, its transparency is increasingly obscured. In the Fleurieu Peninsula region of South Australia, farmers and food producers face increasing pressures on their farm gate prices and suffer from weak connections between the local community and their produce. Much of the food being produced in the region is exported out of it, creating the conditions for a food desert, and further risks from the impact of climate change could add to the financial pressures faced by farmers and food producers in the region. This paper focuses on a small group of food producers, food consumers and a retailer from the region who appear to have built a food community around a transparent food system. Interviews with people from this community provide data that indicate there are both challenges and benefits that arise from increased transparency in small-scale food systems. Themes of respect and trust are emerging from this data and both suggest that high-functioning interpersonal relationships play a key role in fostering these values. Analysis also revealed an interconnection between trust, respect and transparency. This was noted in interviewees' descriptions of a struggling farmer's market, where locals had lost trust in the market due to a lack of transparency around produce gluts and subsequent impacts on freshness due to produce storage. Conversely, the transparency being embraced by each interviewee appeared to attract greater respect from their customers. Their transparency made inconsistencies in supply quantities, price points or end-products more acceptable, and increased the trust between them and their customers. This examination of how an engaged community of people can connect through transparent food systems is framed as an early indicator of Ezio Manzini's concept of 'cosmopolitan localism'. The paper questions how this sense of community might be amplified and extended throughout the region in ways that maintain the values of trust and respect, to create a greater sense of transparency in the food system.

Presenter Biography

Niki Wallace is an Australian-based designer and writer whose practice combines creative services, consultancy and research. Niki's practice and research are both focused on design for transitions and she is a PhD candidate (in examination) at University of South Australia. Her thesis investigates the consumption and waste problem through collaborative design methods that are underpinned by radical design thinking for sustainability. Niki is an early career academic who also teaches in the communication design program at UniSA.

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What happens to end-of-life solar PV panels and why does it matter? Developing a legal and policy framework regulating the efficient and environmentally sustainable elimination of solar PV waste.

Professor Eileen Webb

University of South Australia

There is no denying the appetite of Australian consumers for solar energy and this uptake, predominantly for environmental and cost-efficiency reasons, shows no signs of abating. While this adoption is to be encouraged for a clean energy future, the downside is that Australia lacks an end of life (EOL) strategy for solar panels. The panels have an expected product life of 25 years and, at this stage, there has been scant consideration given to recycling and disposal of 'superannuated' solar panels. Waste from solar PV panels is the fastest growing electronic waste (e-waste) component and the failure to address its ultimate disposal could damage the 'clean' image of solar PV panels and create an undesirable waste legacy for future generations.

A coordinated response from manufacturers, suppliers and consumers is required to allocate the environmental impact of the solar panels across their lifecycle and beyond. The consumers role is pivotal because, even if, for example, a model akin to Germany was adopted by which the consumer is not ultimately responsible for disposal, it is imperative that consumers understand their role and responsibility in the disposal of solar PV waste. Consumers are encouraged to purchase solar panels due to environmental considerations and the lure of government subsidies. However, many consumers assume that the panels operate indefinitely, and, at present, providers of solar panels rarely discuss the panels' end of life considerations.

By drawing on international precedents and mapping developments already taking place in Australia, this presentation makes recommendations for the design of a robust legal and regulatory framework to manage end of life solar PV panels. In so doing, consideration is given to the varied stakeholders relevant to the process including manufacturers, suppliers and consumers. The presentation concludes with a consideration of opportunities for research, technology and innovation in this developing area.

Presenter Biography

Dr Joytishna Jit has expertise in environmental law research and technical guidance development including cleanup technologies and Australia's national environment frameworks. Professor Peter Majewski is a Research professor Advanced Material, FII. He has expertise in materials science and engineering, including energy generation. Professor Majewski has previous experience with photovoltaic systems.

Professor Eileen Webb is a senior law academic with expertise in real and personal property law (including environmental and planning regulation) and consumer and product liability law.

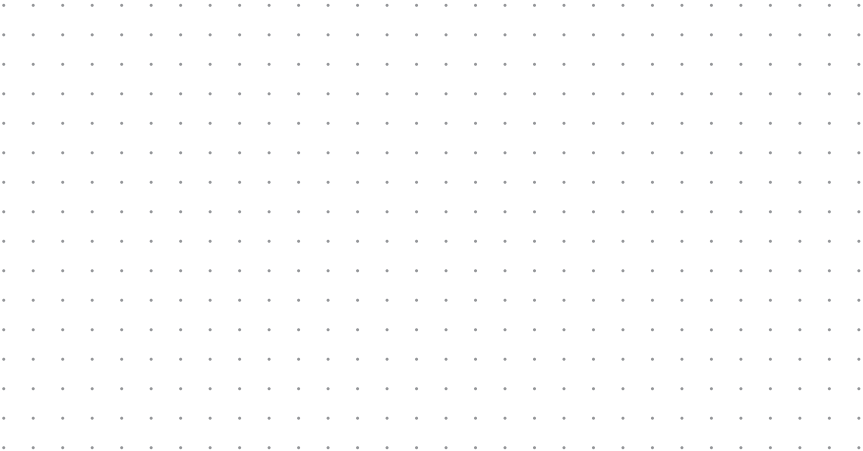
Professor Jennifer McKay is a socio legal researcher who has expertise in corporate law and governance, including law reform issues around improving institutional arrangements to promote ecologically sustainable development.

Dr Sarah Moulds is an ECR with a strong focus on law reform and parliamentary law making. Sarah's academic research is supported by an extensive career in law reform and legal policy, including environmental reforms.

Professor Rick Sarre is Dean of the UniSA School of Law and has expertise in socio-legal research and the intersection between business and law.

Dr Joe McIntyre is the Research Director in the School of Law and has expertise in comparative, constitutional and administrative law.

Associate Professor Sang-Heon Lee has expertise in engineering management and the supply chain.



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Sponsors and Acknowledgments

We would like to extend our thanks to the sponsors for their generous support of this seminar, and to all the volunteers who have contributed to make the event possible.



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