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THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

2015 ALCAS Agrifood LCA Conference:

Triple bottom line analysis of food systems & food waste

Joe Lane
Research Fellow, Uni of Qld
j.lane1@uq.edu.au

Beatriz Reutter
PhD student, UQ

Michalis Hadjikakou
Research Fellow, UNSW

eeIO for coupled socio-$-enviro analysis

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Use (demand)

Consumptive demand

Supply

	Agriculture	Mining	Plastic	Restaurants	householders	Government	Export
Agriculture	20			40	22	1	44
Mining	30		30	10	33		11
Plastic	10		4	20	11	1	33
Restaurants	10	10	0	30	55		0

TBL indicators

Value added ($)	2	11	2	5
employment	2	14	1	6
Water Use	23	1	1	1
GHG	7	3	4	1

		Region 1				Region 2			
		S1	S2	S3	Final Demand	S1	S2	S3	Final Demand
Region 1	S1								
	S2								
	S3								
	Value Added								
Region 2	S1								
	S2								
	S3								
	Value Added								

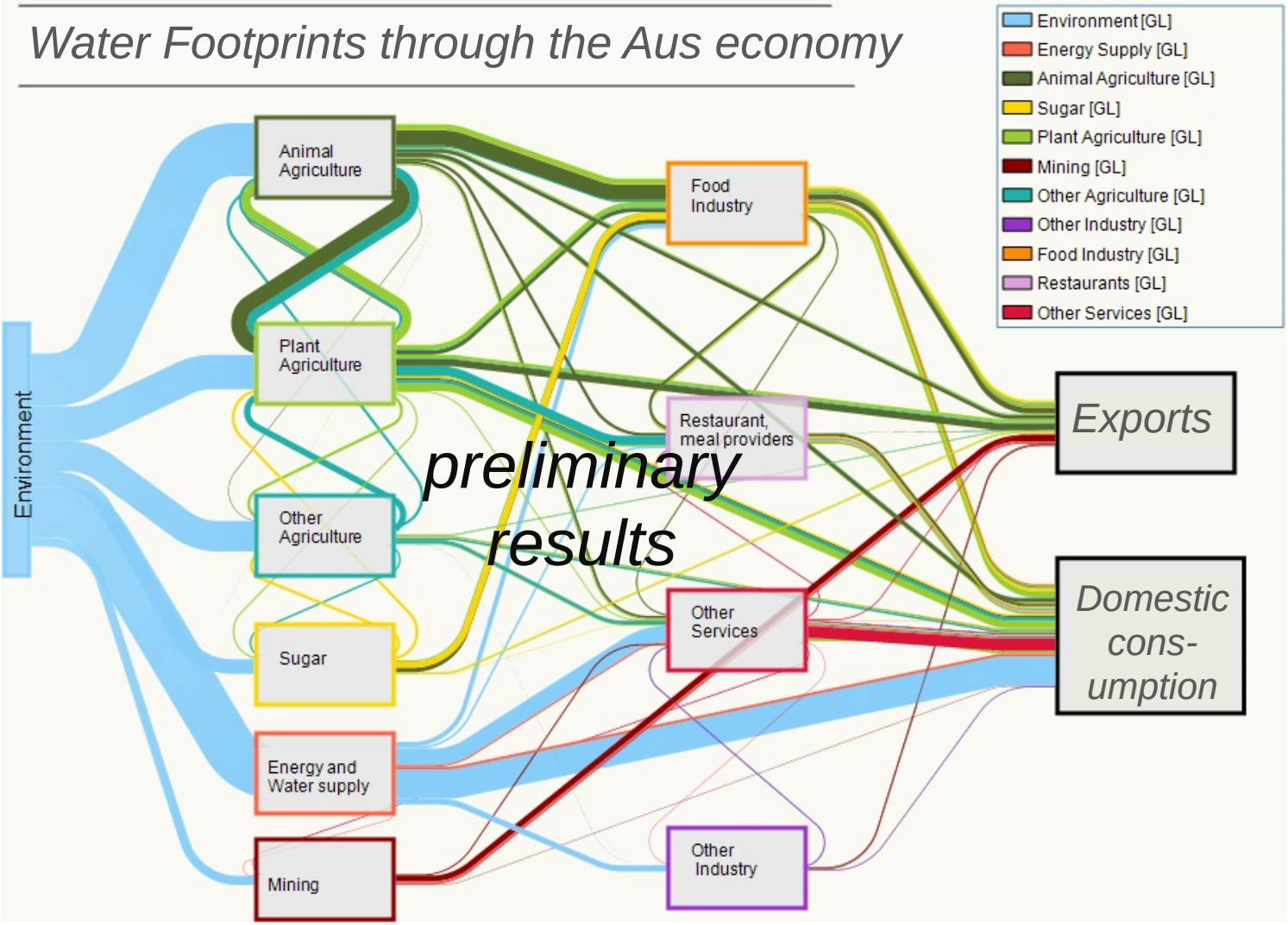
internal R1 transactions

trade from R1 to R2

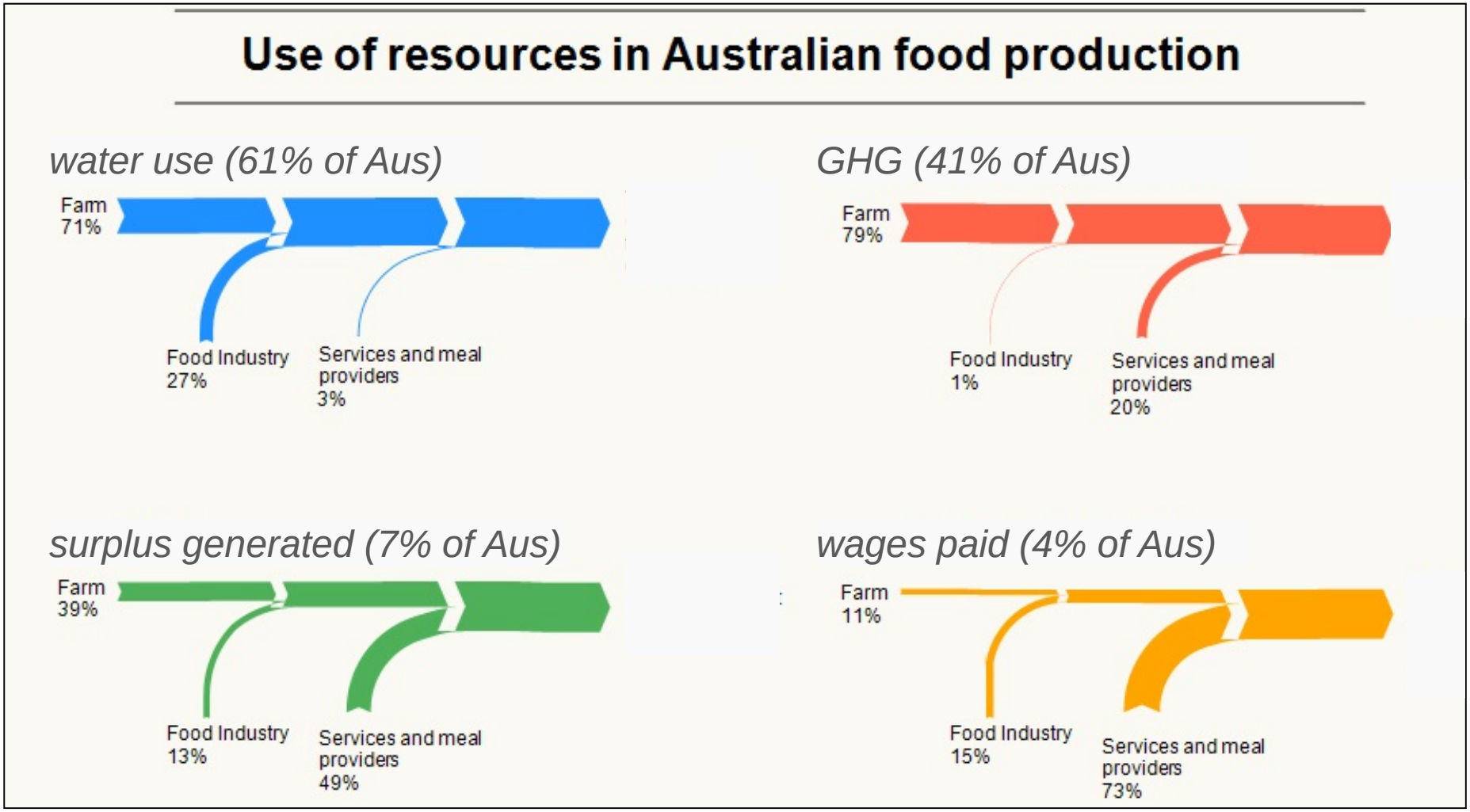
trade from R2 to R1

internal R2 transactions

1) macro-LCA & supply-chain analysis



1) macro-LCA & supply-chain analysis



Reutter et al (in press) Food Waste consequences: eeIO as a framework for analysis

2) micro-LCA by consumer

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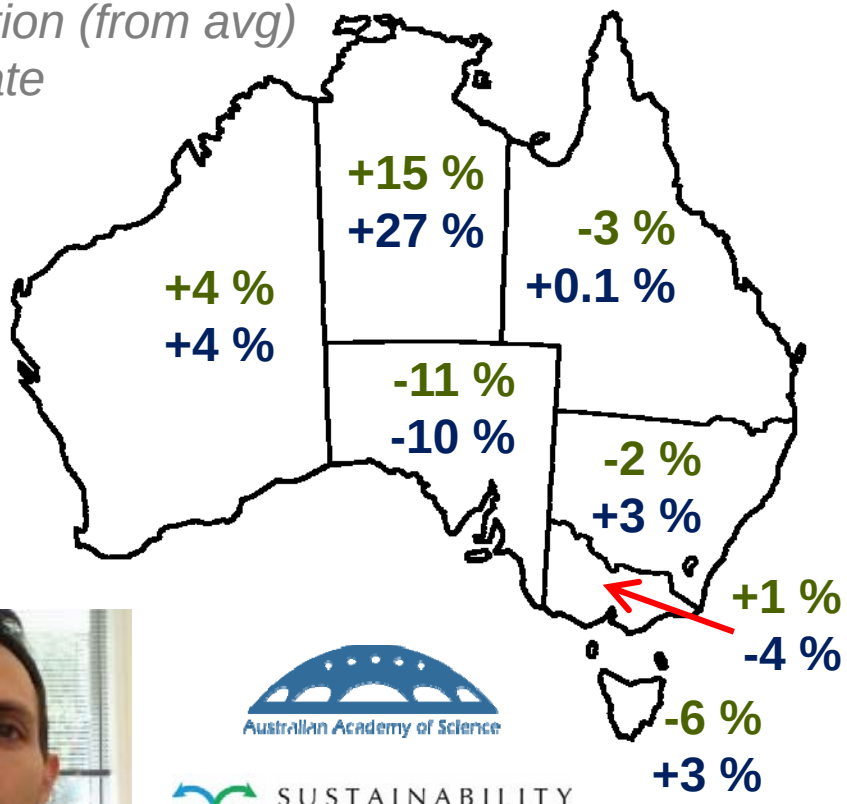
2009 avg Australian household 'foodprints' *(prelim results)*

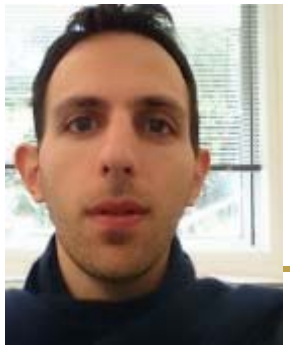
=

190 kg CO^2-e/wk

2839 L/wk

Variation (from avg) by state





Australian Academy of Science

SUSTAINABILITY ASSESSMENT PROGRAM

Variation (from avg) by demographic

A - Exclusive Environs

+29 %
+14 %

(8.3% of households)

The most prosperous & desirable family households

C – Independence & Careers

+4 %
-8 %

(9.5% of households)

Apartment-dwelling, young professionals & students in city central locations

H - Middle Australia

-7 %
+1 %

(7.2% of households)

Mixed family forms living on the outskirts of metropolitan areas

If interested, contact: Michalis Hadjikakou (m.hadjikakou@unsw.edu.au)

3) micro-LCA by product (using eeIO)

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e.g. analyse specific products or supply chains

e.g. analyse specific food-waste interventions

how good is the enviro-LCI for each sector & supply chain stage

? consistency with high-quality process-LCI

? quality of the source enviro-data

? allocation of impacts up the supply chain

increase number of sectors / regions

4) food waste - challenging the rhetoric

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food production causes lots of enviro impact + *a lot of food is wasted* = *lets reduce food waste to save the environment*

who are the winners & losers…?

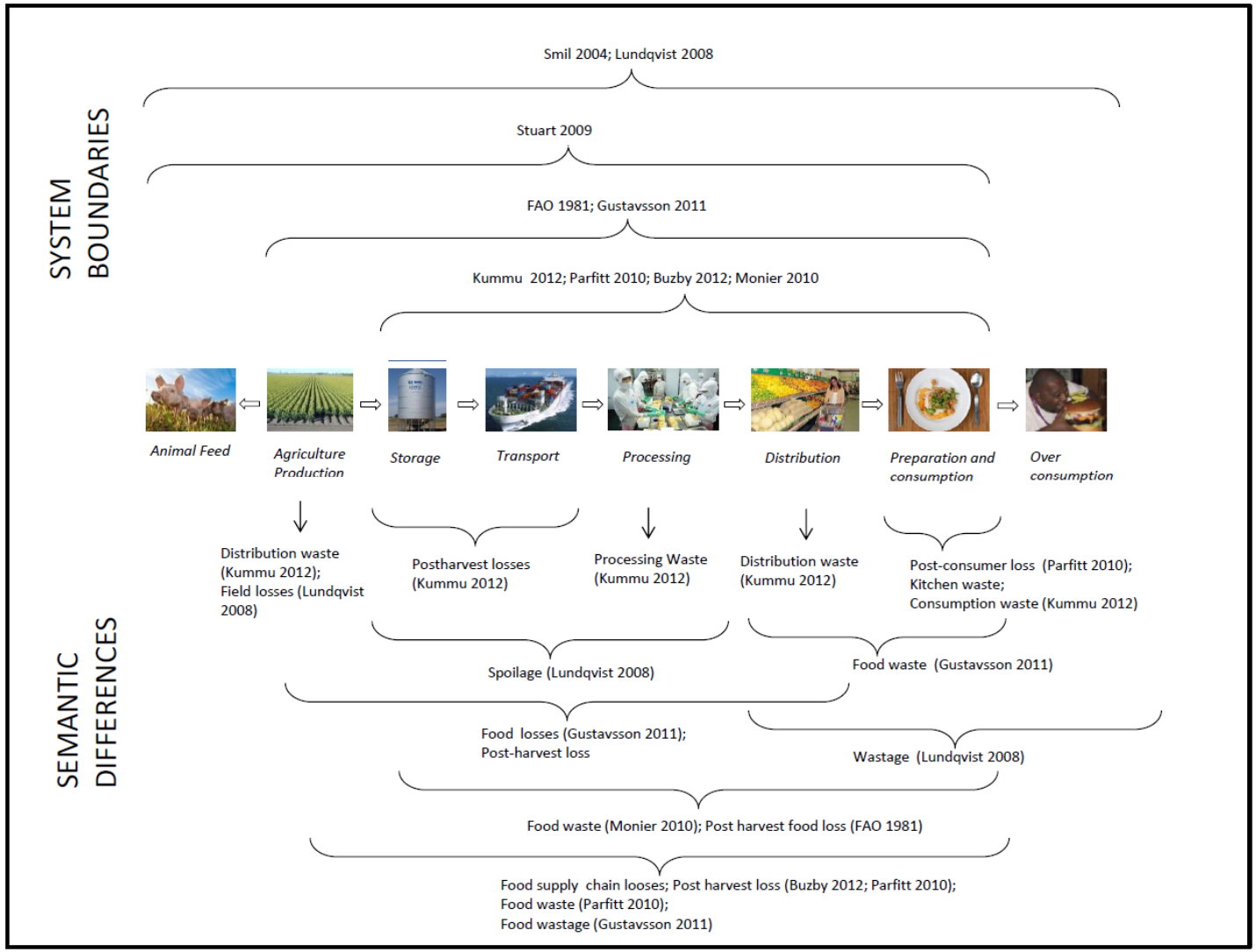
where is the food wasted…?

are there enviro tradeoffs…?

which are the greatest opportunities…?

how to model the effect of interventions…?

4) food waste - messy data & literature



4) food waste – Australian significance

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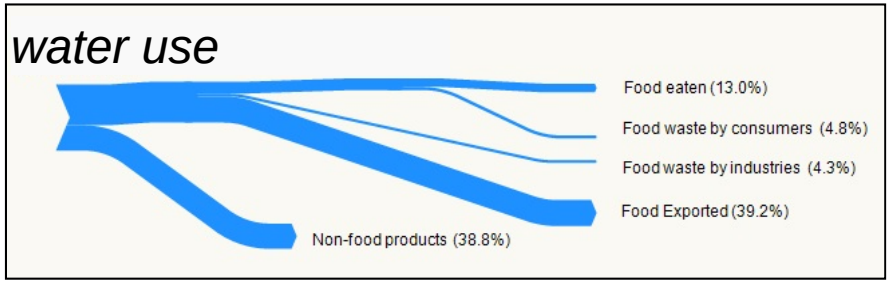
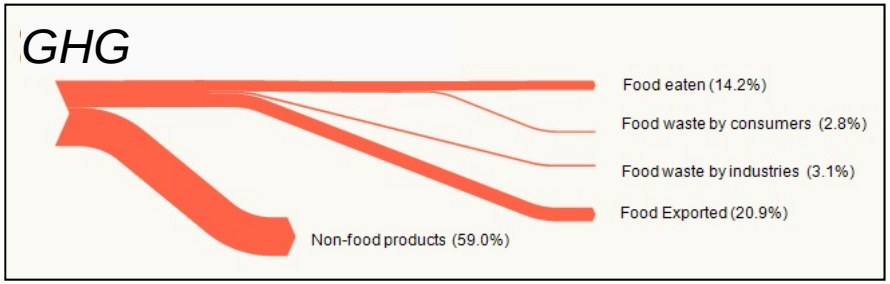
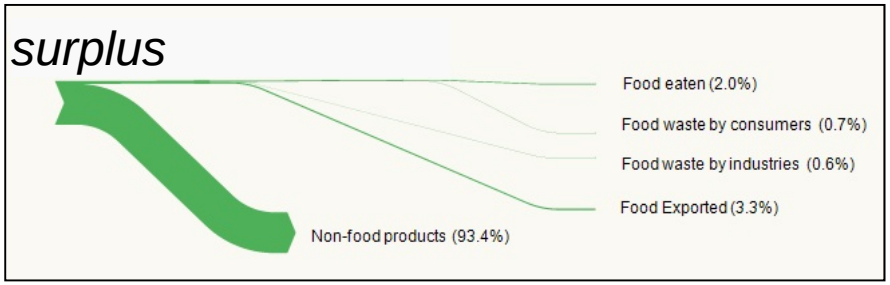
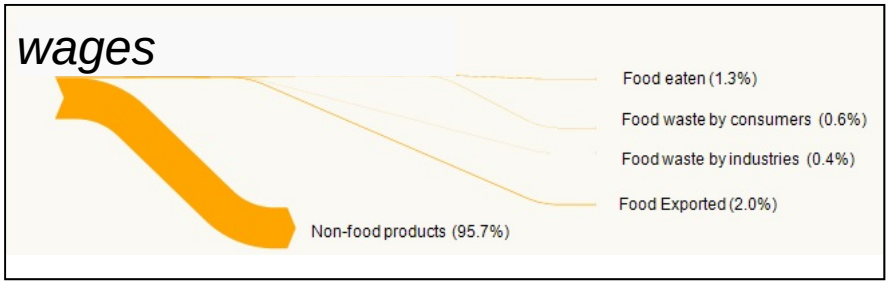


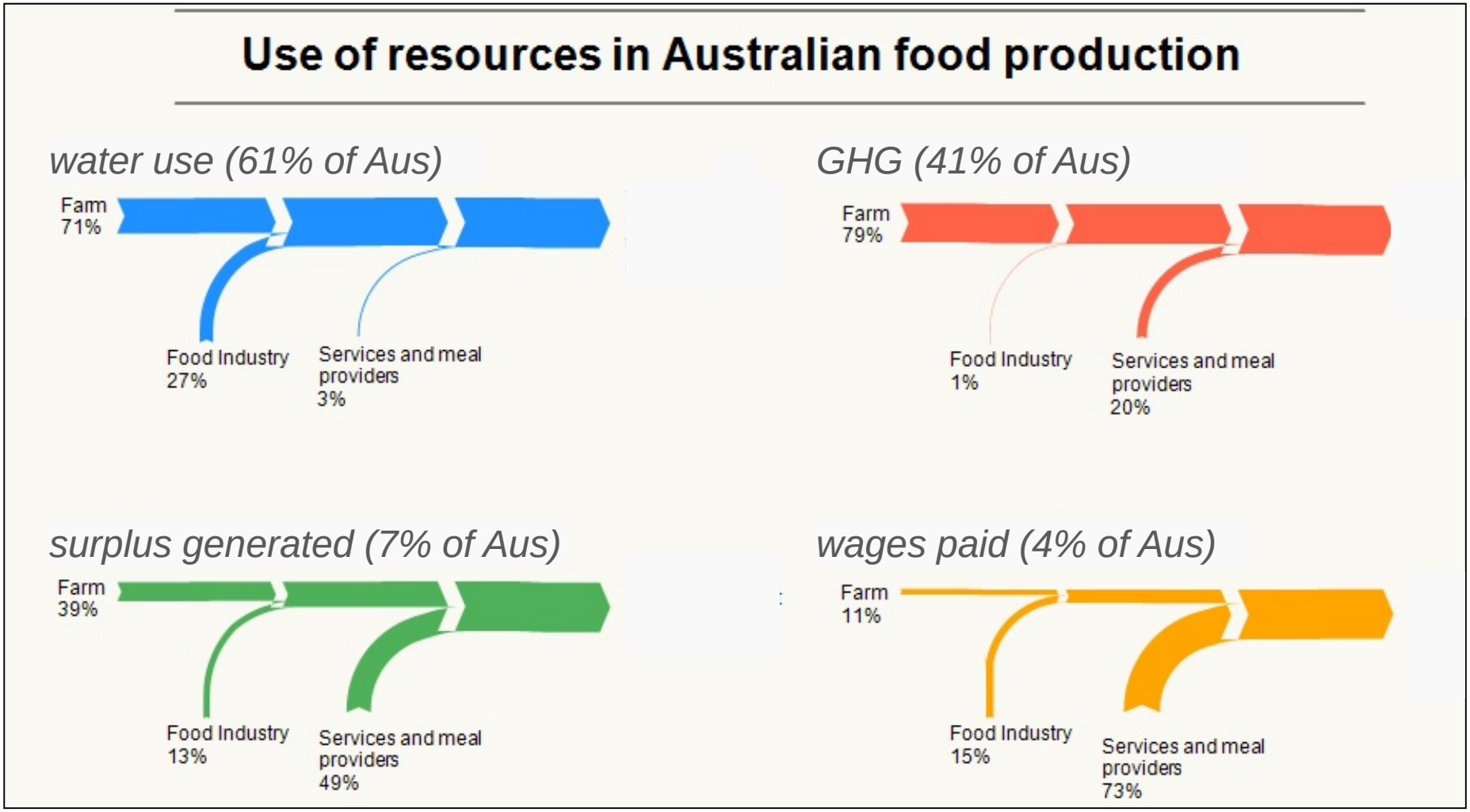






Reutter et al (in press) Food Waste consequences: eeIO as a framework for analysis

4) food waste – varying tradeoffs



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4) food waste – sectoral significance

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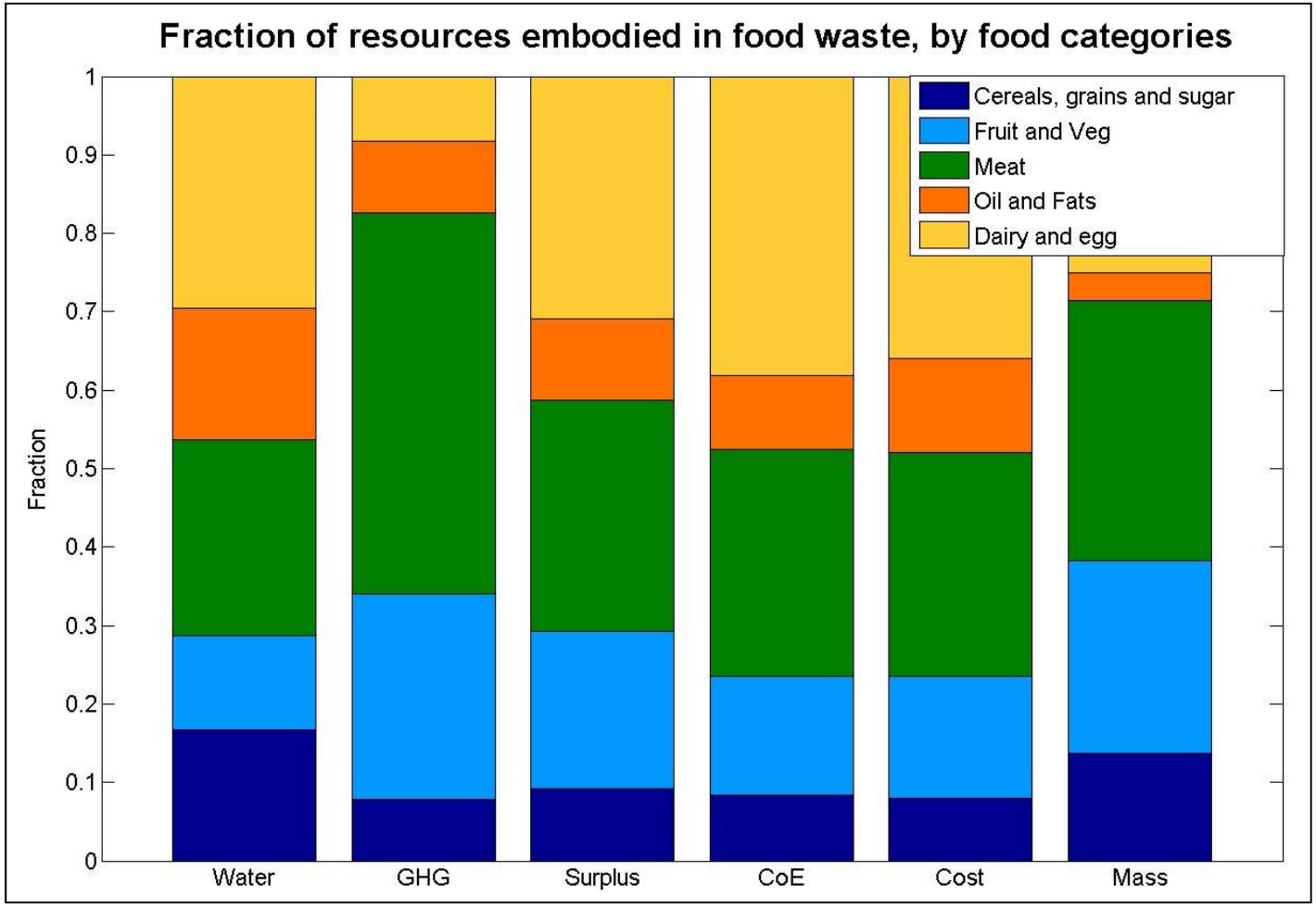
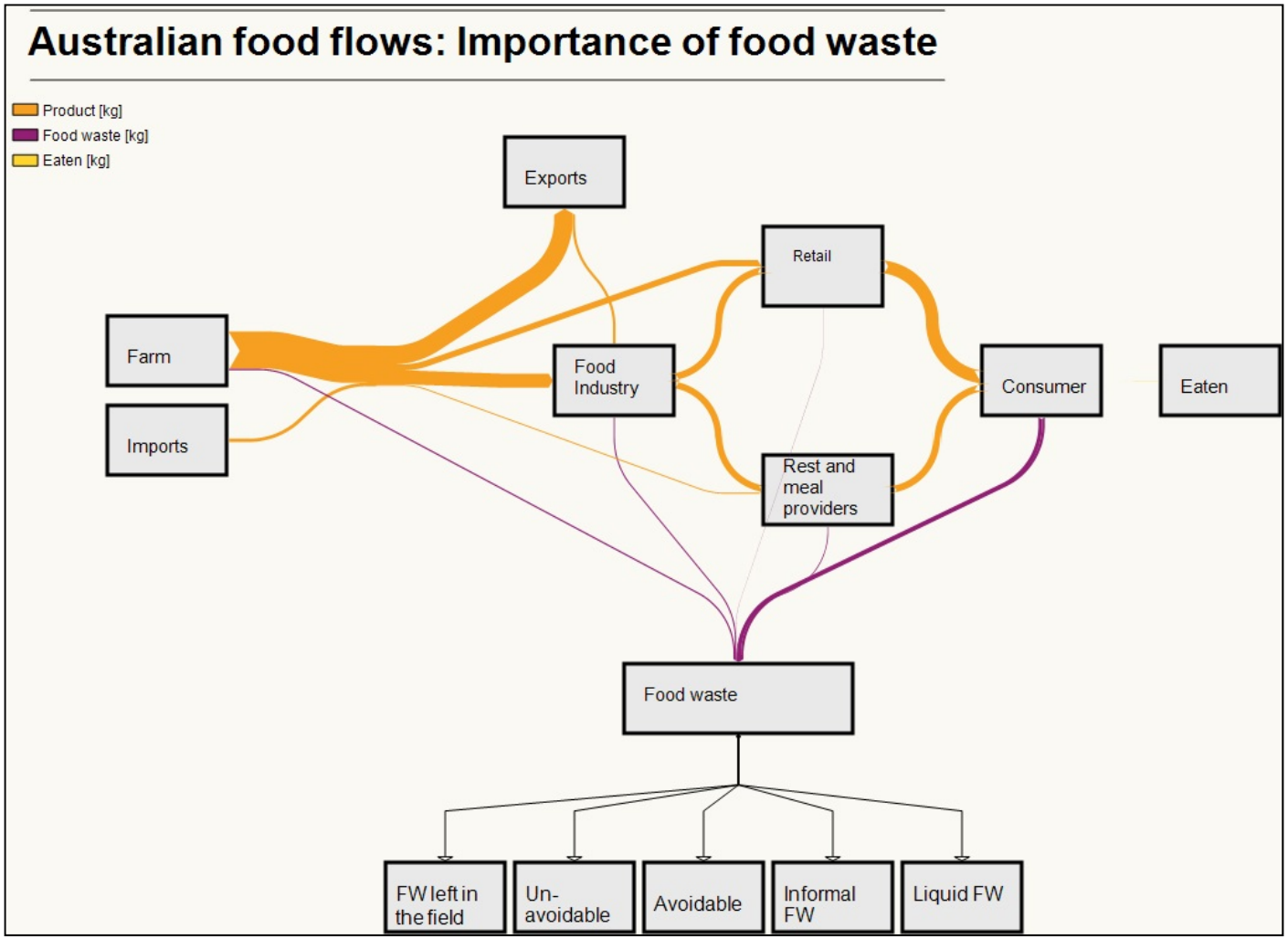


4) food waste – limited Australian data



4) estimating food flows – **can you help ?**

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Agriculture *Storage* *Processing* *Distribution* *Food Providers* *Household*

Onsite:
- Left in the field
- Animal Feed
- Compost
- Energy recovery

Solid waste to:
- Land fill
- Commercial compost
- Energy recovery

Liquid waste to:
- Sewage

Onsite:
- Compost
- Animal Feed

please contact us to contribute your expert guidance &/or data

Data availability

Good data on total wastes

Reasonable data on organic wastes

Few estimates of food waste

Volumes are known, but no (?) data on food product flows

A few regional estimates

Flows measured (in $) in IO databases

Nutrition balance is possible (?)

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Thank you

University of Queensland

Joe Lane *(j.lane1@uq.edu.au)*

Beatriz Reutter *(b.reutter@uq.edu.au)*

University of New South Wales

Michalis Hadjikakou *(m.hadjikakou@unsw.edu.au)*

the Australian IELab

http://ielab.info

https://nectar.org.au/industrial-ecology-virtual-laboratory