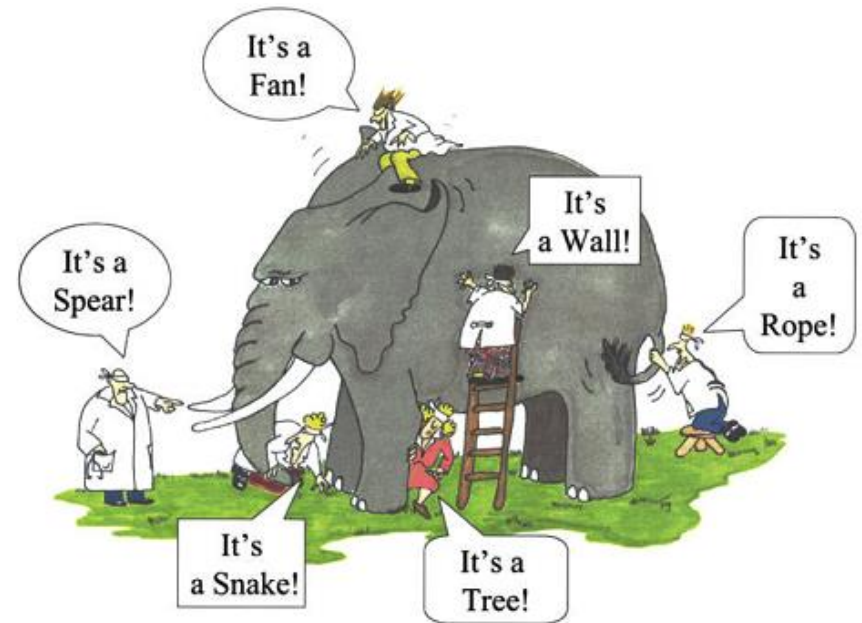


Food loss and waste (FLW) accounting: System and data!

Data, data, data! → important for priority setting, progress monitoring, and impact analysis!

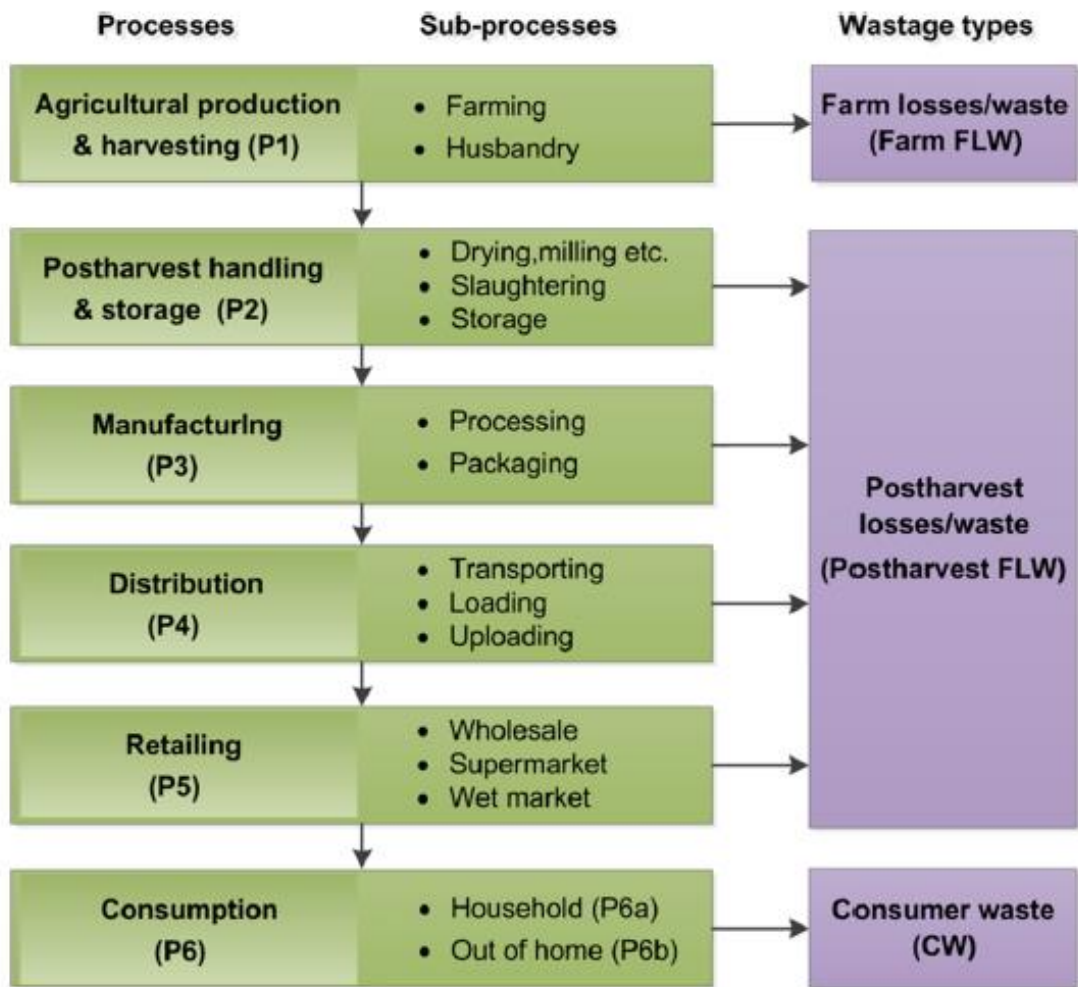


MinFuture

<https://minfuture.eu/>



Food waste in a (mass balance consistency) systems context



Missing Food, Missing Data? A Critical Review of Global Food Losses and Food Waste Data

Li Xue,^{†,‡} Gang Liu,^{*,§} Julian Parfitt,^{||} Xiaojie Liu,[†] Erica Van Herpen,[⊥] Åsa Stenmarck,[#] Clementine O'Connor,[@] Karin Östergren,^v and Shengkui Cheng[†]

Compiled food losses and food waste data reported in the reviewed publications (by physical weight)

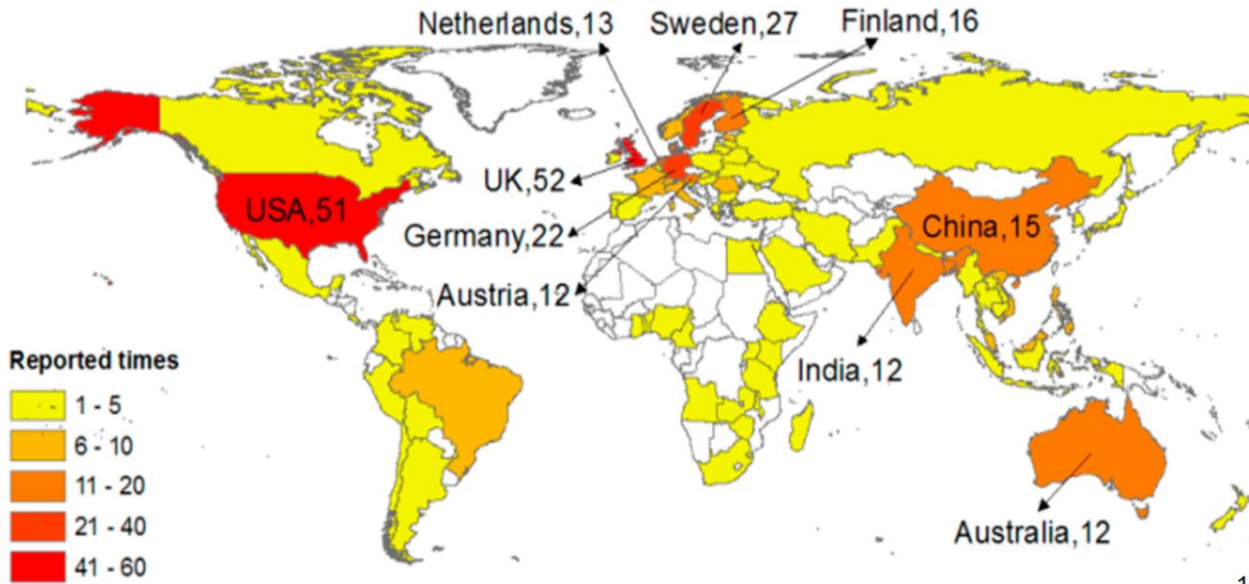
No.	Reference	Type of publication	Year of publication	Region	Country	State	Year of estimation	Method	Agri-food type	Sub-type	Code	Agri-production and Harvest		
												MT	Kg	%
1	WRI (1998)	RT	1998		Philippines		1996	L	Rice		1			
1	WRI (1998)	RT	1998	Southeast Asia			1996	L	Rice		1			
2	Davies and Koniak (2000)	RT	2000	USA			1997	L	Total food		0			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Total food		0			
2	Davies and Koniak (2000)	RT	2000	USA			1998	L	Total food		0			
2	Davies and Koniak (2000)	RT	2000	USA			1998	L	Total food		0			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Cereal products		1			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Fruits		4			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Vegetables		5			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Dairy		8			
2	Davies and Koniak (2000)	RT	2000	USA			1995	L	Meat, poultry, fish		6			

The compiled 5,898 data points are organized in a complementary Excel database and can be download free here:

<http://pubs.acs.org/doi/abs/10.1021/acs.est.7b00401>

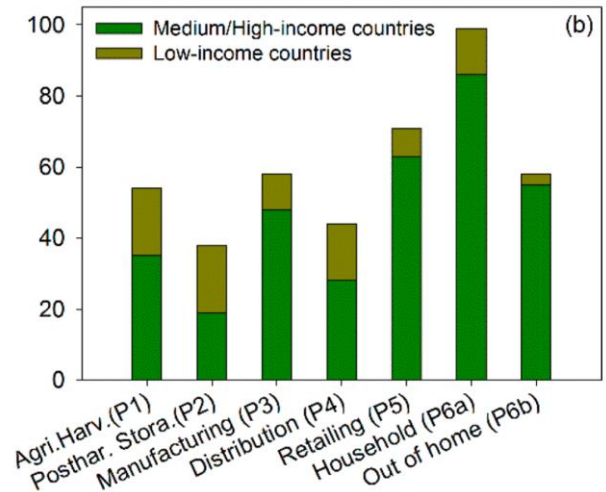
→ Data for 84 countries, 52 individual years (1933-2014) in 202 publications

How much do we know?

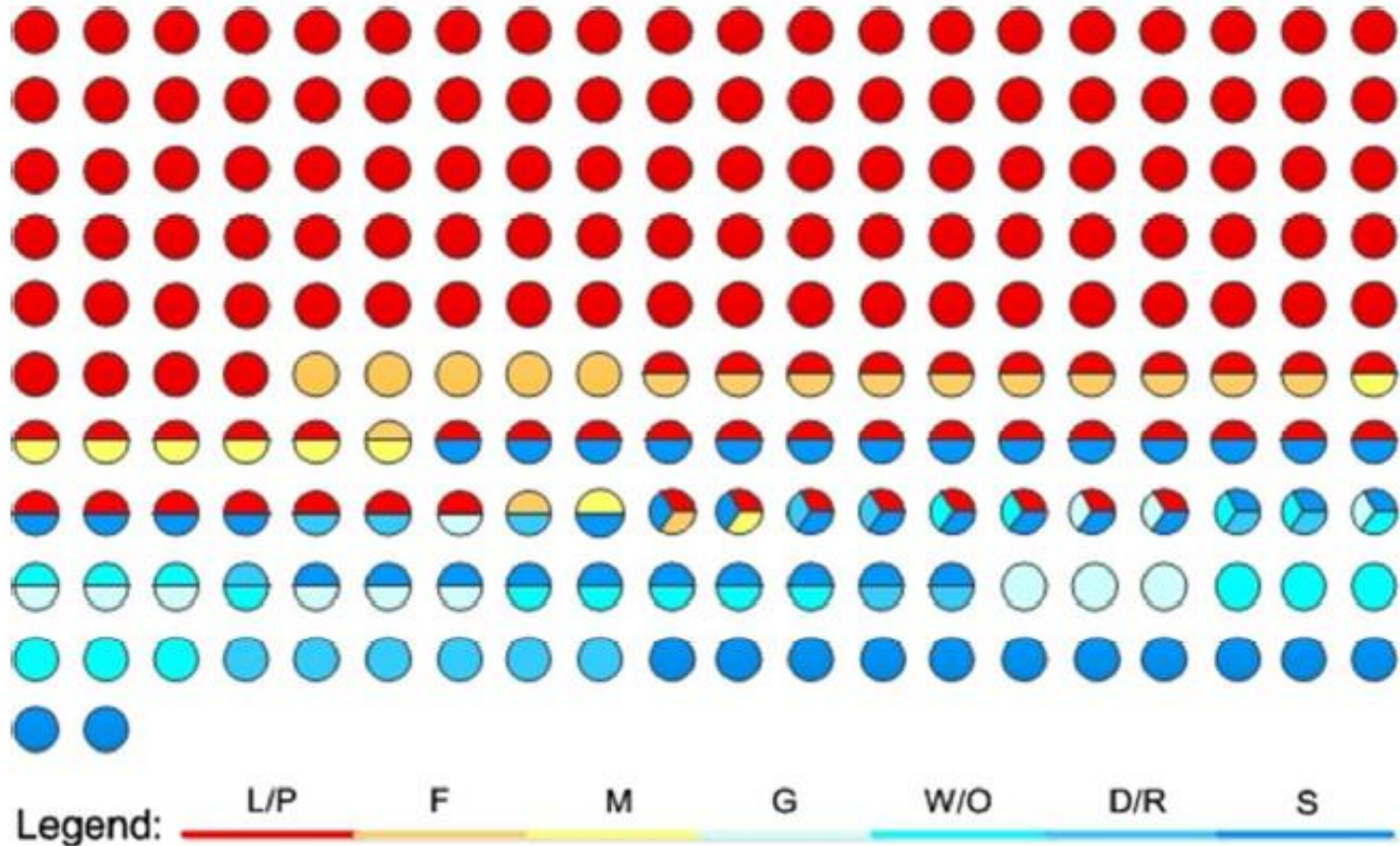


Geographical distribution of case countries with reported food wastage data

The number of publications covering different life cycle stages and different countries



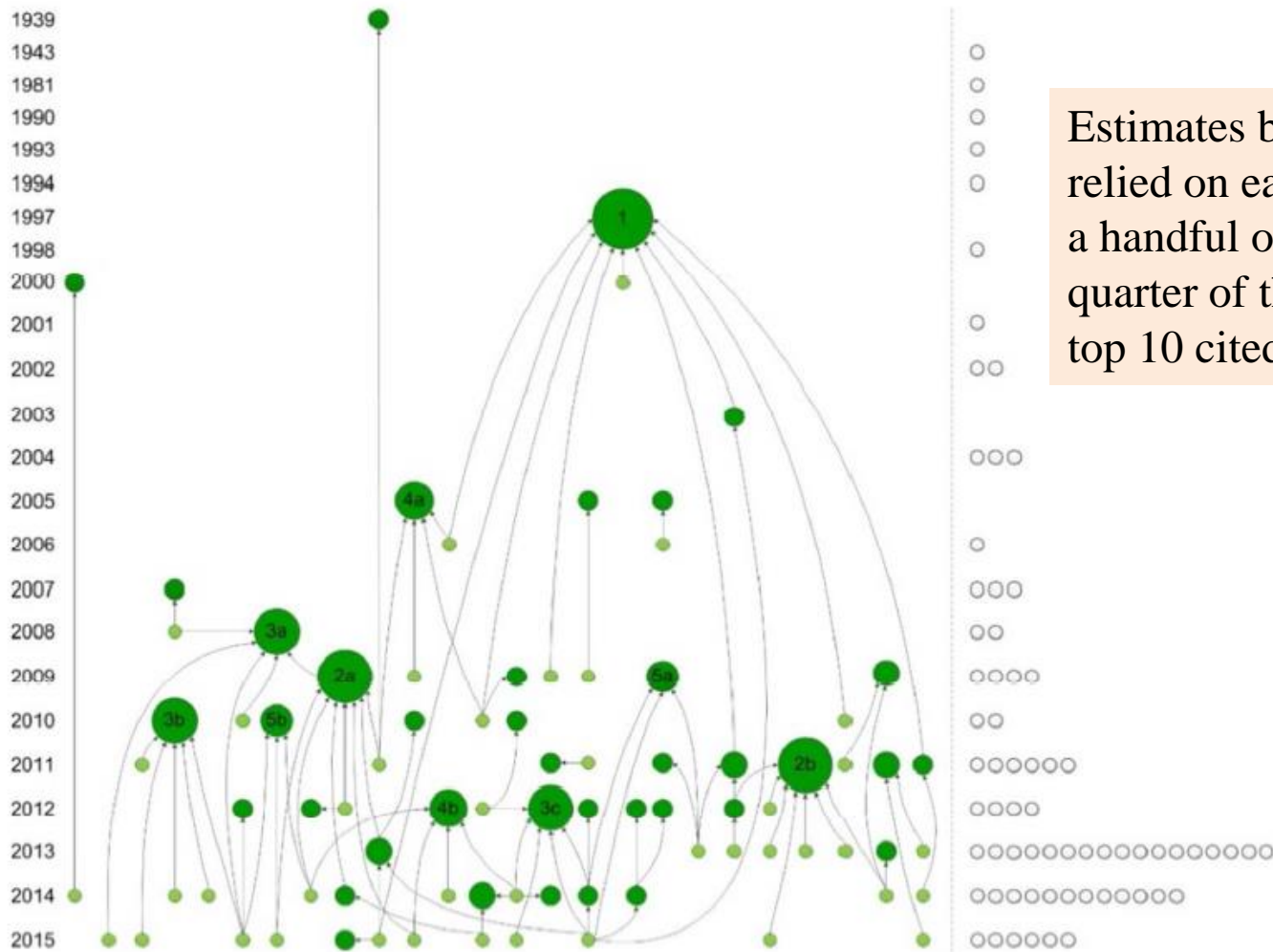
And how good/consistent/reliable are they?



An overview of the methods used: literature data and proxy data (L/P), Food balance (F), Modelling (M), Garbage collection (G), Weighing and observations (W/O), Diaries and records (D/R), and Survey (S)



Over half of them based exclusively on literature...



Estimates based on literature often relied on each other and pointed to a handful of publications: Over a quarter of them cited data from the top 10 cited publications



Addressing data gaps: A first estimate for China



(a) Interviewing the chef



(b) Separating the food leftover



(c) Interviewing the consumer

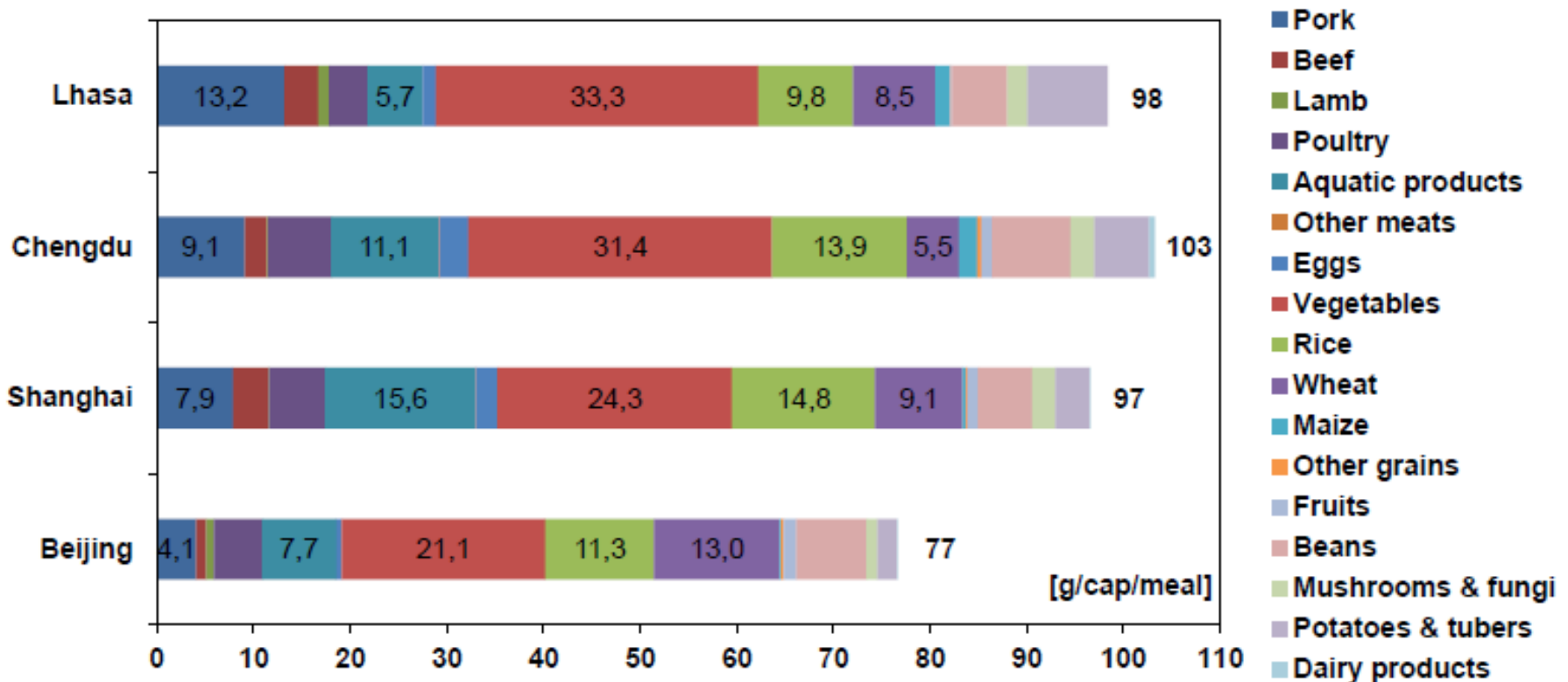


(d) Questionnaire filling and on-site weighing

3557 tables in 195 restaurants in four case cities investigated

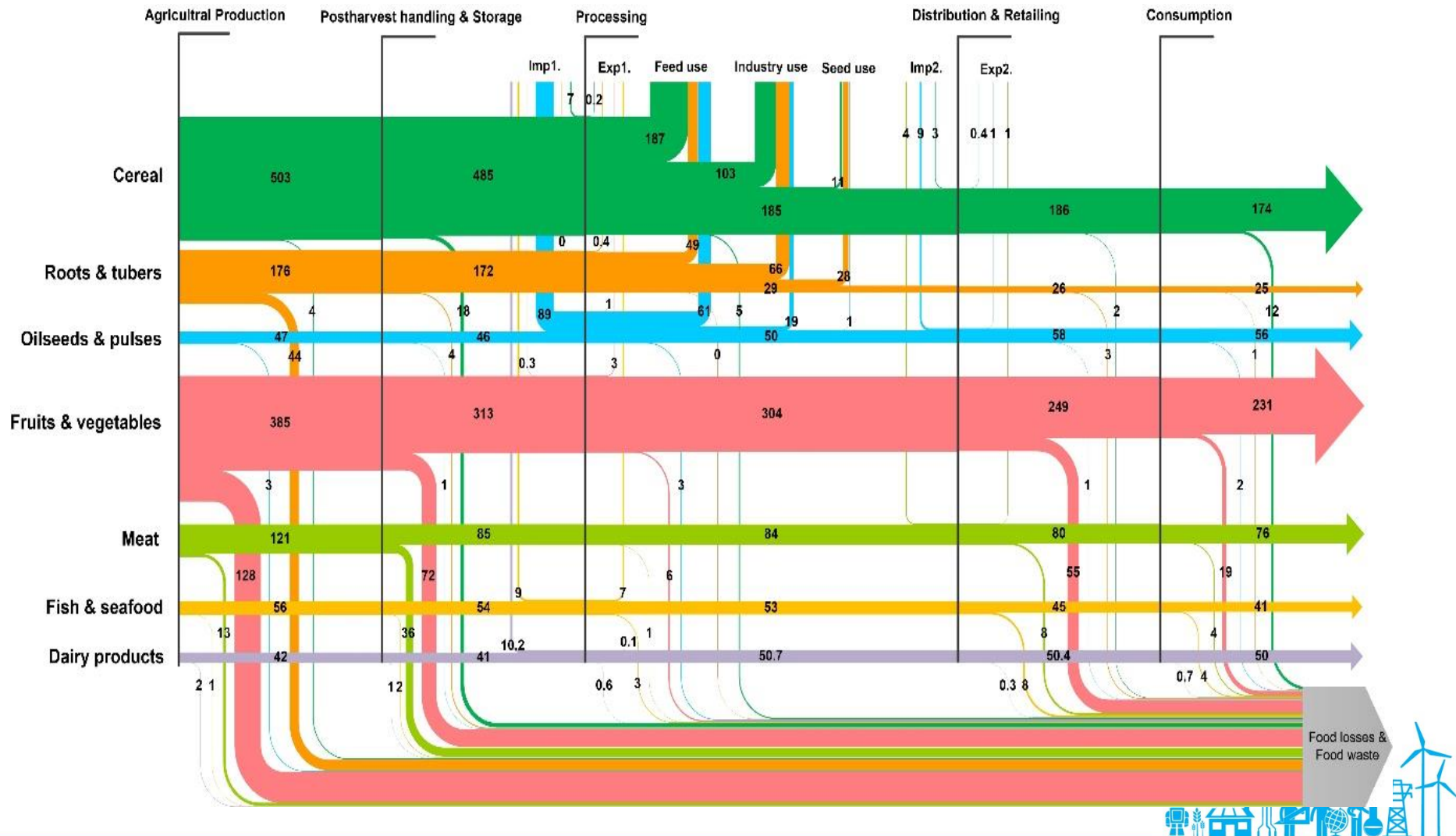


Restaurant food waste in the four Chinese cities

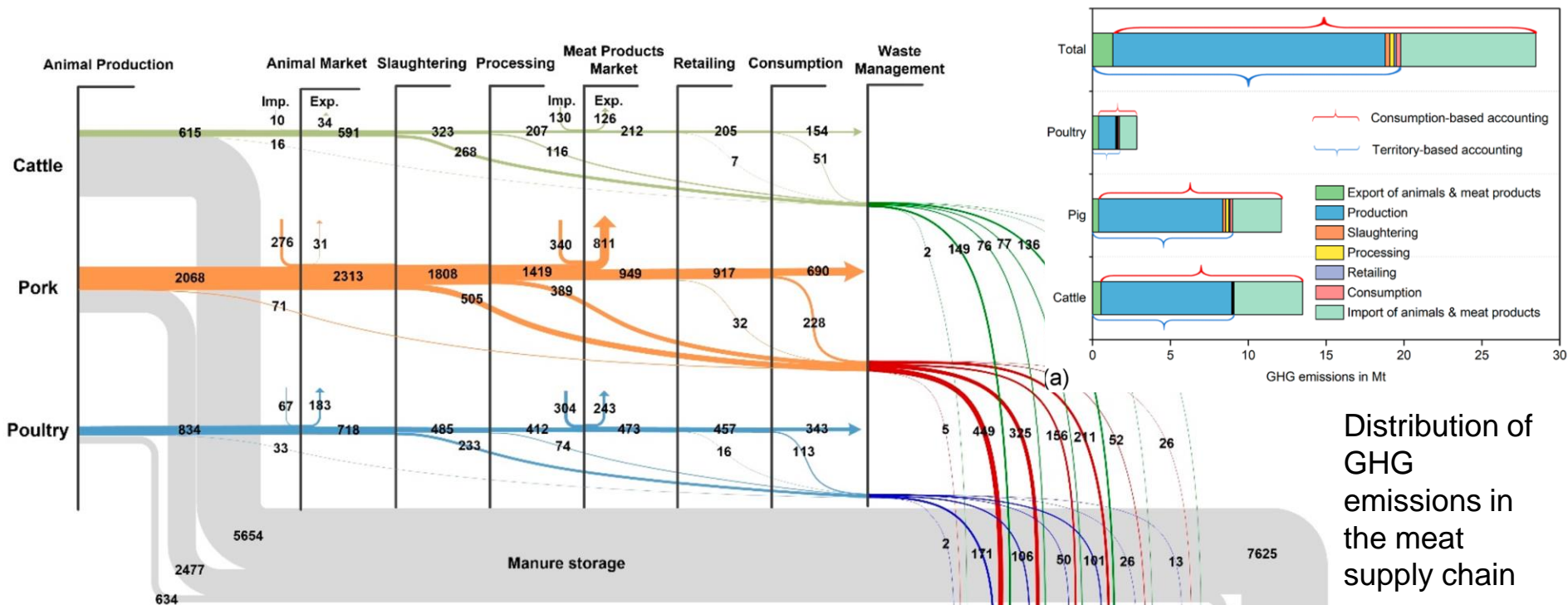


- Varies by cities, consumer groups, restaurant categories, and purposes of meals...
- Already close to the level of Nordic countries (5-15 kg/cap) (with a much lower GDP)
- Total restaurant waste of the 4 cities (1.3 Mt) \approx that of Germany (1.9 Mt).

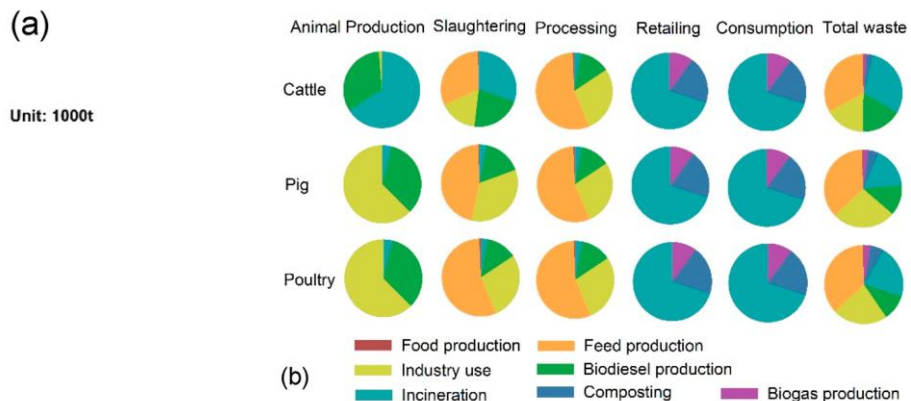
FLW of major agrifood products along the whole value chain in China



Efficiency of the German meat supply chain



Distribution of GHG emissions in the meat supply chain



Treatment of FLW along the Germany meat supply chain



Different scenarios of GHG emissions in a consumption-based accounting

(a) Reduction scenarios		Low					Medium					High				
		%	Cattle	Pork	Poultry	Total	%	Cattle	Pork	Poultry	Total	%	Cattle	Pork	Poultry	Total
S1	Emission intensity	-5	-3	-3	-2	-3	-10	-6	-7	-5	-6	-20	-13	-14	-9	-13
S2a	Slaughtering PE		0	0	0	0		0	0	0	0		0	0	0	0
S2b	Processing PE	-5	0	0	0	0	-10	0	0	0	0	-20	0	0	0	0
S2c	S2a + S2b		0	0	0	0		0	0	0	0		0	-1	-1	0
S3a	Slaughtering byproducts		-3	-1	-1	-2		-5	-2	-2	-4		-9	-4	-5	-7
S3b	Processing byproducts	-5	-2	-1	-1	-1	-10	-4	-2	-1	-3	-20	-7	-4	-2	-5
S3c	S3a + S3b		-4	-2	-2	-3		-8	-4	-3	-6		-15	-8	-6	-11
S4a	Retail waste		0	0	0	0		-1	0	-1	-1		-1	-1	-1	-1
S4b	Consumption waste	-10	-2	-2	-2	-2	-25	-5	-4	-6	-5	-50	-10	-8	-10	-9
S4c	S4a + S4b		-2	-2	-3	-2		-6	-5	-6	-5		-11	-9	-11	-10
S5a	Animal import		0	0	0	0		0	-1	0	0		0	-2	-1	-1
S5b	Animal export		0	0	0	0		0	0	0	0		0	0	0	0
S5c	S5a + S5b		0	0	0	0		0	-1	0	0		0	-2	-1	-1
S5d	Meat products import	-25	0	0	0	0	-50	1	1	0	1	-100	2	2	0	2
S5e	Meat products export		-1	-3	-1	-2		-2	-6	-2	-4		-4	-12	-4	-7
S5f	S5d + S5e		-1	-2	-1	-1		-1	-5	-2	-3		-2	-10	-4	-6
S5g	S5c + S5f		-1	-3	-1	-2		-1	-6	-2	-3		-2	-11	-5	-6
S6	Meat consumption	-10	-7	-6	-7	-6	-25	-17	-14	-18	-16	-50	-34	-29	-35	-32
S7	Beef consumption	-5	-3	0	0	-1	-10	-7	1	1	-3	-25	-17	2	2	-7
S8	Offal thrown away	-10	-4	-2	-1	-3	-25	-10	-5	-2	-7	-50	-20	-9	-4	-14

