

Food, Tourism & Sustainability

Stefan Gössling, PhD, Professor

Dept. of Service Management and Service Studies, Lund
University, Sweden

School of Business and Economics, Linnaeus University,
Sweden

Western Norway Research Institute



www.stefangossling.de



@StefanGossling



A world to feed

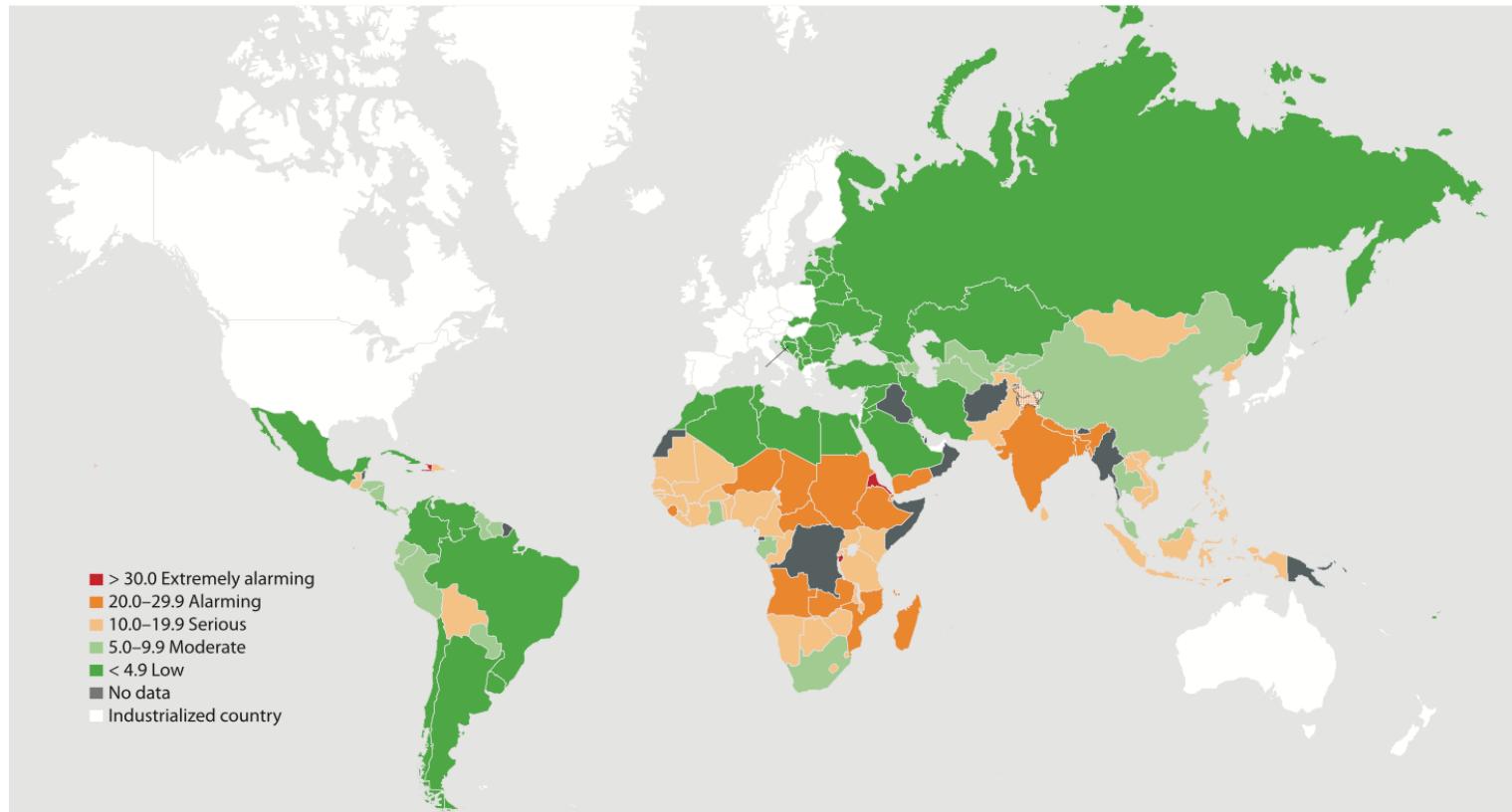


Fig. 1. Global distribution of hunger as quantified by the 2012 Global Hunger Index. The Welthungerhilfe, IFPRI, and Concern Worldwide Hunger map 2012 calculated a Global Hunger Index (7) for 120 countries by using the proportion of

people who are undernourished, the proportion of children under 5 who are underweight, and the mortality rate of children younger than age 5, weighted equally. [Reproduced with permission from Welthungerhilfe, IFPRI, and Concern Worldwide (7)]

Source: Wheeler, T., & Von Braun, J. (2013). Climate change impacts on global food security. *Science*, 341(6145), 508-513.

Food productivity under climate change

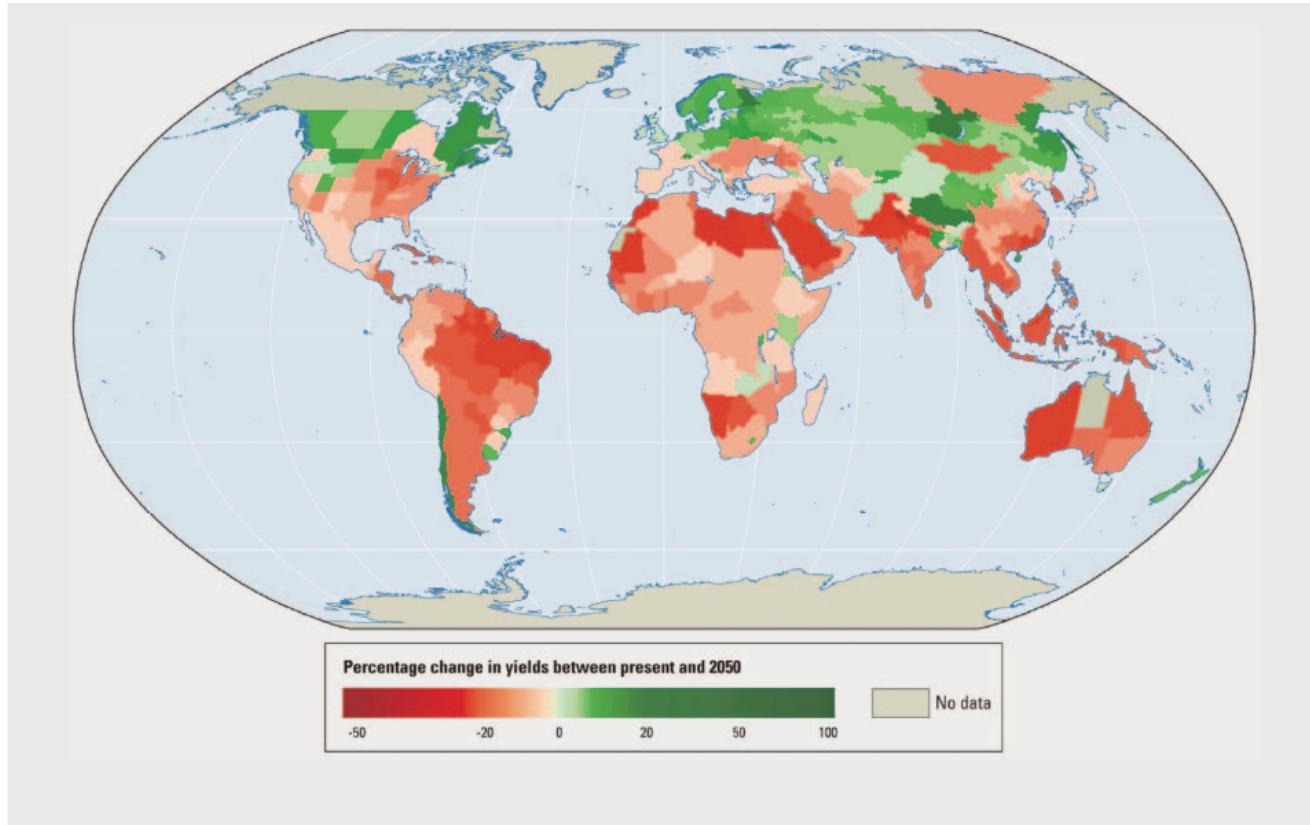
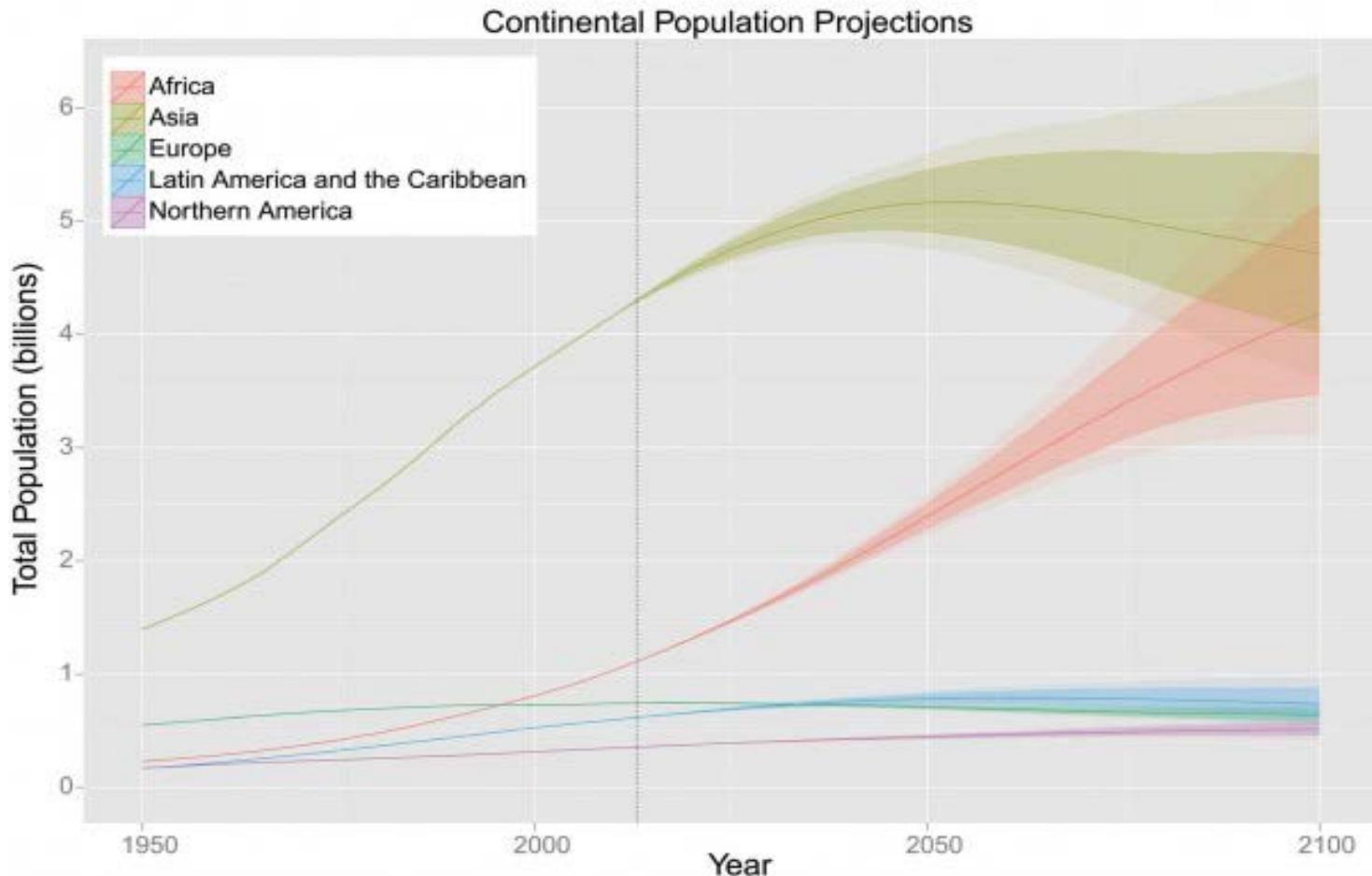


Fig. 2. Global impacts of climate change on crop productivity from simulations published in 1994 and 2010. (Top) The 1994 study (22) used output from the GISS GCM (in this example) with twice the baseline atmospheric CO₂ equivalent concentrations as input to crop models for wheat, maize, soybean, and rice that were run at 112 sites in 18 countries. Crop model outputs were aggregated to a national level using production statistics. (Bottom) The 2010 study (27) simulated changes in yields of 11 crops for the year 2050, averaged across three greenhouse emission scenarios and five GCMs. [Reprinted by permission from (top) Macmillan Publishers Ltd. (22); (bottom) World Bank Publishers (27)]

Source: Wheeler, T., & Von Braun, J. (2013). Climate change impacts on global food security. *Science*, 341(6145), 508-513.

11 billion people by 2100

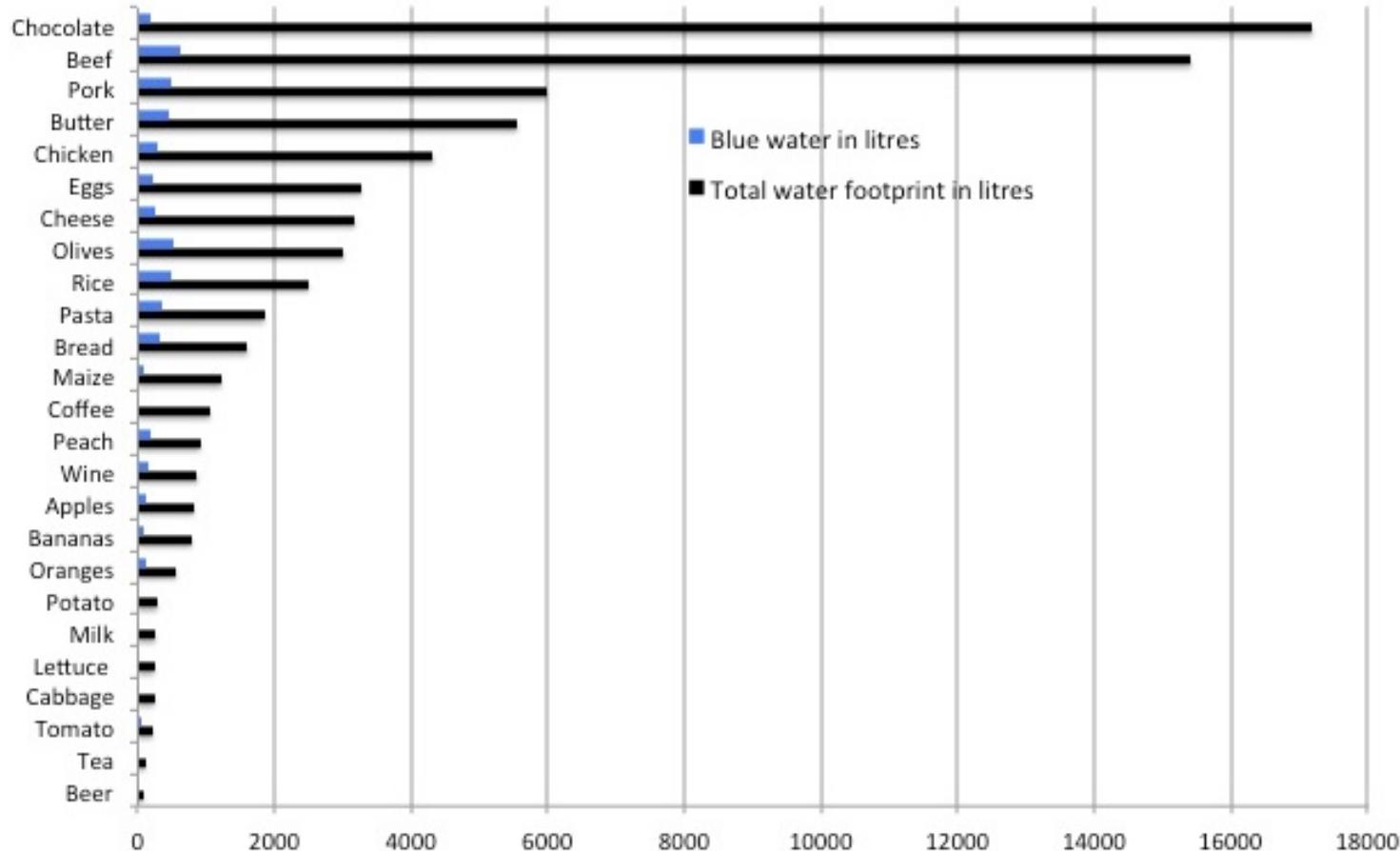


Source: Gerland, P., Raftery, A.E., Sevcikova, H., Li, N., Gu, D., Spoorenberg, T., Alkema, L., Fosdick, B.K., Chunn, J., Lalic, N., Bay, G., Buettner, T., Heilig, G.K., and Wilmoth, J. 2014. World population stabilization unlikely this century. *Science*, online 18 September 2014, 10.1126/science.1257469

Food production is at the heart of sustainability!

- Water use
- Sewage
- Energy use
- Land use
- Emissions (CH_4 , NO_x)
- Animal rights
- Packaging & transports
- Pesticides
- Agroengineering
- GMOs
- Global market concentration
- Human rights
- Global value chains
- Waste

Water



Source: Gössling, S. 2015. New key performance indicators for water management in tourism. Tourism Management 46: 233-244

Energy

Table 5

Emissions involved in transporting various foodstuffs to Germany.

Food transported (1 kg)	Distance			CO ₂	
	Great circle (km)	Corrected (km) ^a	Distance source	kg CO ₂ /tkm ^b	kg CO ₂ /kg food
1. Grapes by aircraft from South Africa	8690	9125	http://www.webflyer.com/travel/mileage_calculator/	0.725	6.62
2. Nile perch by aircraft from Tanzania	6980	7329	http://www.webflyer.com/travel/mileage_calculator/	0.725	5.31
3. Strawberries by aircraft from Egypt	2910	3056	http://www.webflyer.com/travel/mileage_calculator/	0.725	2.22
4. Melons by ship from Brazil		9723	http://www.portworld.com/map/	0.015	0.15
5. Tomatoes by truck from Spain		2333	http://maps.google.com/	0.160	0.37
6. Tomatoes by train from Spain		2441	http://maps.google.com/ (shortest rail route)	0.015	0.04

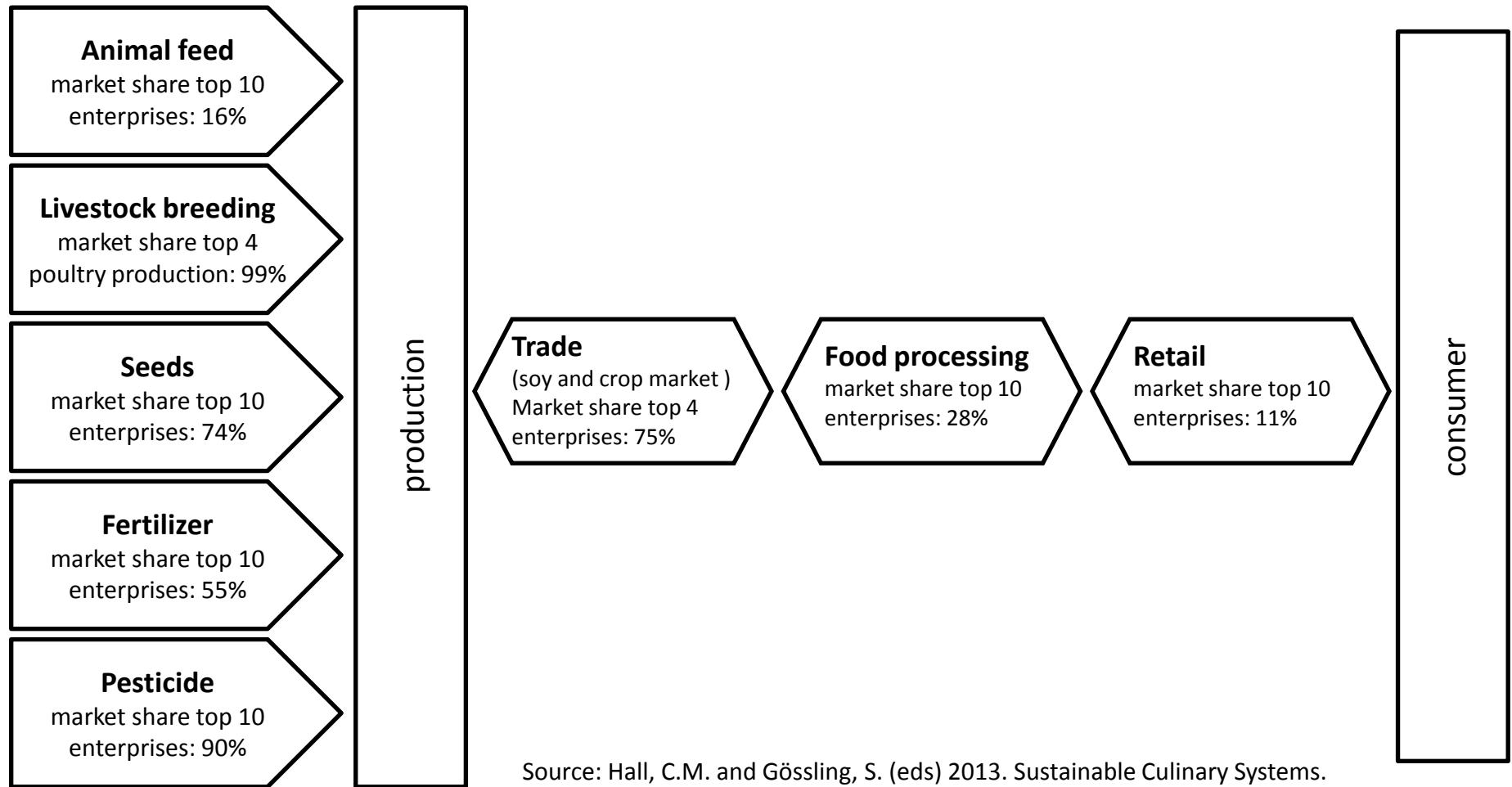
^a Aircraft cannot usually fly directly between two points, so a detour factor has thus been used to correct for this.

^b Emission factors based on Gilbert and Perl (2008), Léonardi and Baumgartner (2004), and Zachariadis and Kouvaritakis (2003).

From South Africa to Germany: 1 kg grapes = 2 kg of fuel (Jet A1)

Source: Gössling, S., Garrod, B., Aall, C., Hille, J., and Peeters, P. 2011. Food management in tourism. Reducing tourism's carbon 'foodprint'. Tourism Management 32(3): 534-543.

Global market concentration



Waste

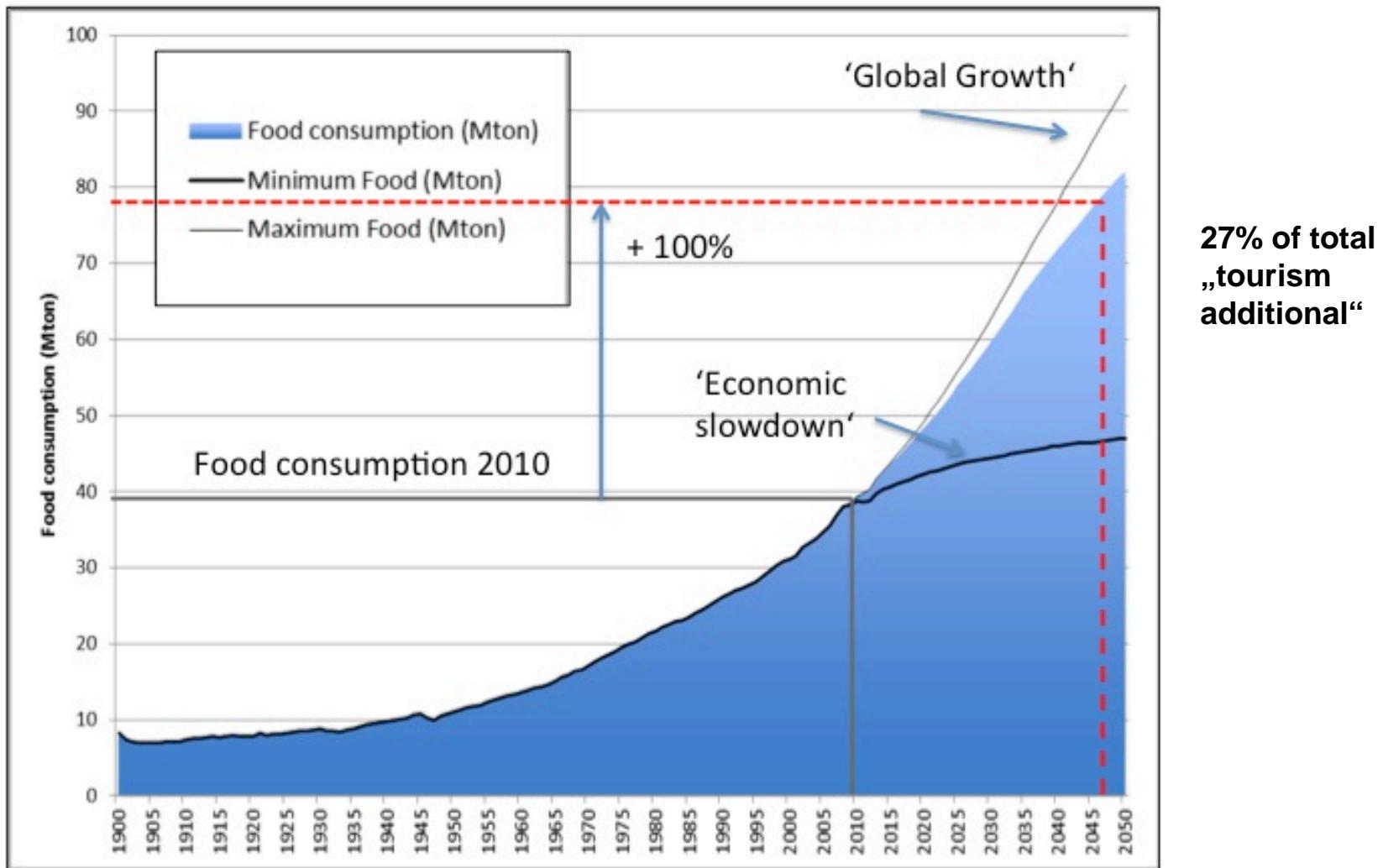
- UK food hospitality waste going to landfill in 2009: 598,000 t, of this avoidable: 67%.

Photograph:
Food waste after breakfast,
Tangaloo Island, Australia

Source: Defra (2011). Food Statistics
Pocketbook 2010. York: DEFRA.

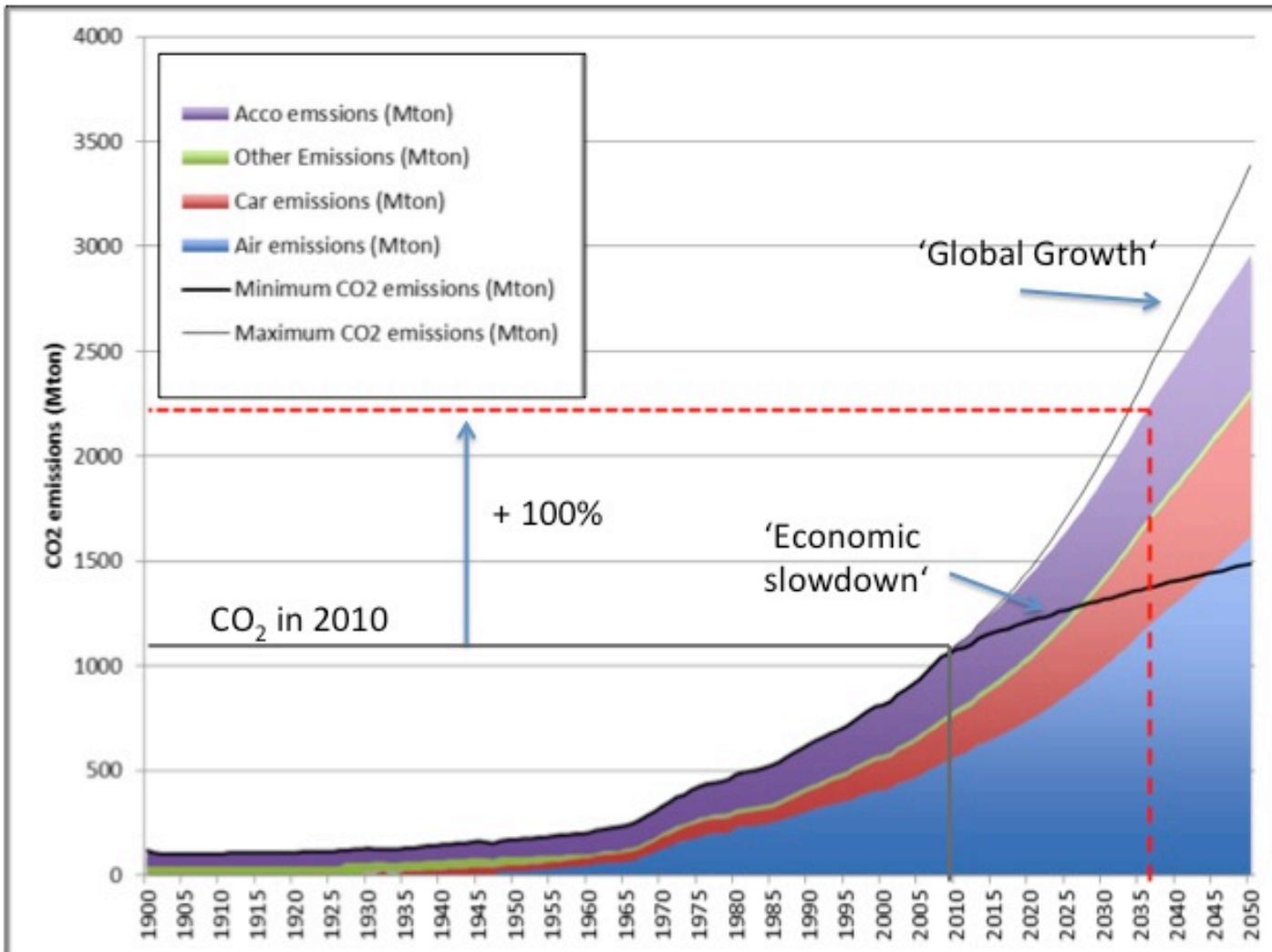


Food consumption in tourism: 1900-2050



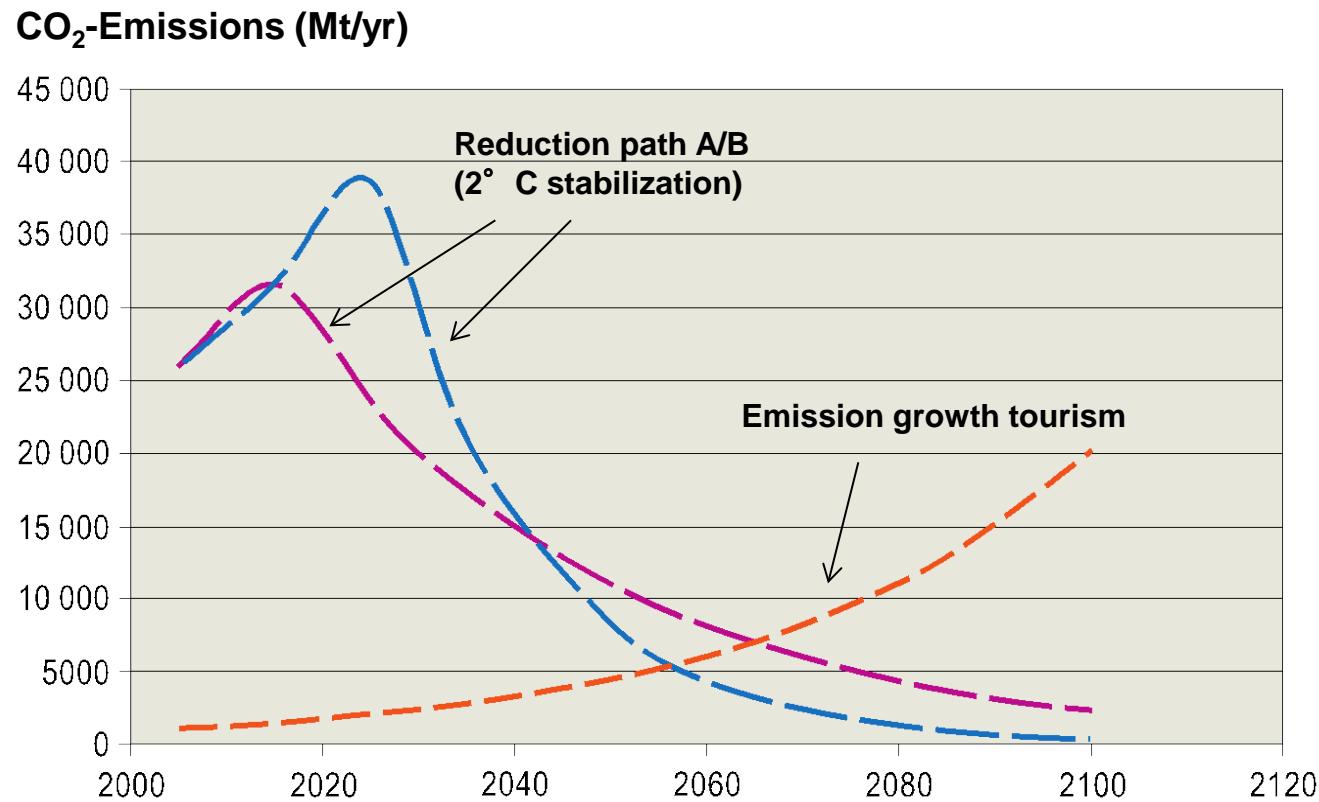
Source: Gössling, S. and Peeters, P. 2015. Assessing tourism's global environmental impact 1900-2050. Journal of Sustainable Tourism, 23(5): 639-659.

Tourism and climate change: CO₂ emissions 1900-2050



Source: Gössling, S. and Peeters, P. 2015. Assessing tourism's global environmental impact 1900-2050. Journal of Sustainable Tourism, 23(5): 639-659.

CO₂-emissions from tourism and sustainable planetary boundaries



Source: Scott, D., Peeters, P., and Gössling, S. 2010. Can tourism deliver its 'aspirational' emission reduction targets? *Journal of Sustainable Tourism* 18(3), 393-408.

Food and Tourism

- Tourists: 75 billion meals consumed per year, 200 million per day (data for 2005)
- Higher protein food; greater quantity; more wasted than at home
- Purchases at lowest cost, usually sourced from world markets

Source: Gössling, S., Garrod, B., Aall, C., Hille, J., and Peeters, P. 2011. Food management in tourism. Reducing tourism's carbon 'foodprint'. *Tourism Management* 32(3): 534-543.

A hotel manager's voice

Everything I fly. Even the coffee I fly. In terms of fuel, this hotel is terrible. We place the order for Christmas stuff now: it will be coming from Dubai, by container. If I order now, I don't have to fly it here. Christmas for me is August latest.

General Manager, five-star hotel, Seychelles

What tourism should do

- Use greater quantities of sustainable foods (locally sourced, organic, vegetarian)
- Create linkages to local producers to improve value chains
- Reduce food waste
- Present regional, organic food choices as quality choices to tourists

The 3 Ps of food management in hospitality



Purchases



Purchase rules

- Buy locally, from small producers
- Avoid foodstuffs grown in heated greenhouses, transported by air, or high in the food chain (chicken > pork > lamb > beef)
- Avoid specific foods (giant prawns, lobster), and products (aluminum foil)
- Use greater amounts of vegetables, potatoes, grains, pelagic fish or chicken

Source: Gössling, S., Garrod, B., Aall, C., Hille, J., and Peeters, P. 2011. Food management in tourism. Reducing tourism's carbon 'foodprint'. *Tourism Management* 32(3): 534-543.

Preparation



Preparation rules

- Create attractive menus with vegetarian options, or reduced amounts of meat (train staff in vegetarian cooking)
- Reduce number of overall choices (waste)
- Don't be afraid to run out of individual offers
- Adjust portion sizes 'right', offer doggy bags
- Use energy-efficient cooking routines
- Handle waste (reduce, reuse, recycle)

Source: Gössling, S., Garrod, B., Aall, C., Hille, J., and Peeters, P. 2011. Food management in tourism. Reducing tourism's carbon 'foodprint'. *Tourism Management* 32(3): 534-543.

Presentation



Presentation rules

- Avoid buffets
- Place meats in the backgrounds
- Present vegetarian alternatives
- Present smaller quantities
- Provide small plates
- Train staff to recommend low-carbon dishes
- Avoid single use packaging
- Highlight regional and organic choices

Source: Gössling, S., Garrod, B., Aall, C., Hille, J., and Peeters, P. 2011. Food management in tourism. Reducing tourism's carbon 'foodprint'. *Tourism Management* 32(3): 534-543.



Conclusions

- Food highly complex and highly relevant aspect of (tourism) sustainability
- Tourism is jeopardizing global environmental sustainability!
- Tourism's negative environmental impacts cannot be weighted against its developmental benefits
- Tourism has a huge potential to contribute to global sustainability
- Sustainability requires leadership on all political and business levels
- There is a WIN-WIN in sustainable food in tourism

