Food, climate change & the city

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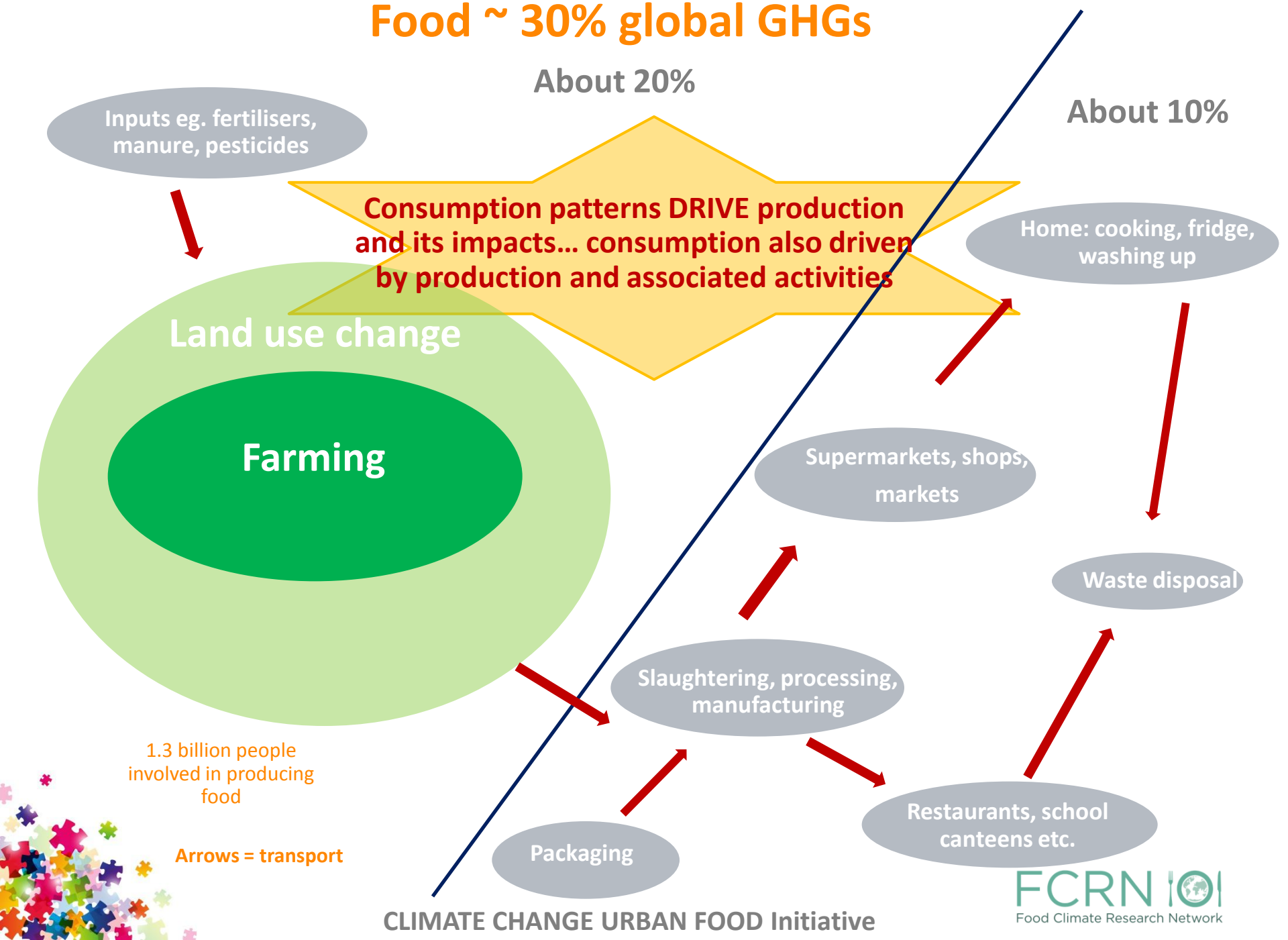
OXFORD MARTIN SCHOOL

FCRN Food Climate Research Network

1. Food & climate

Food ~ 30% global GHGs



CLIMATE CHANGE URBAN FOOD Initiative

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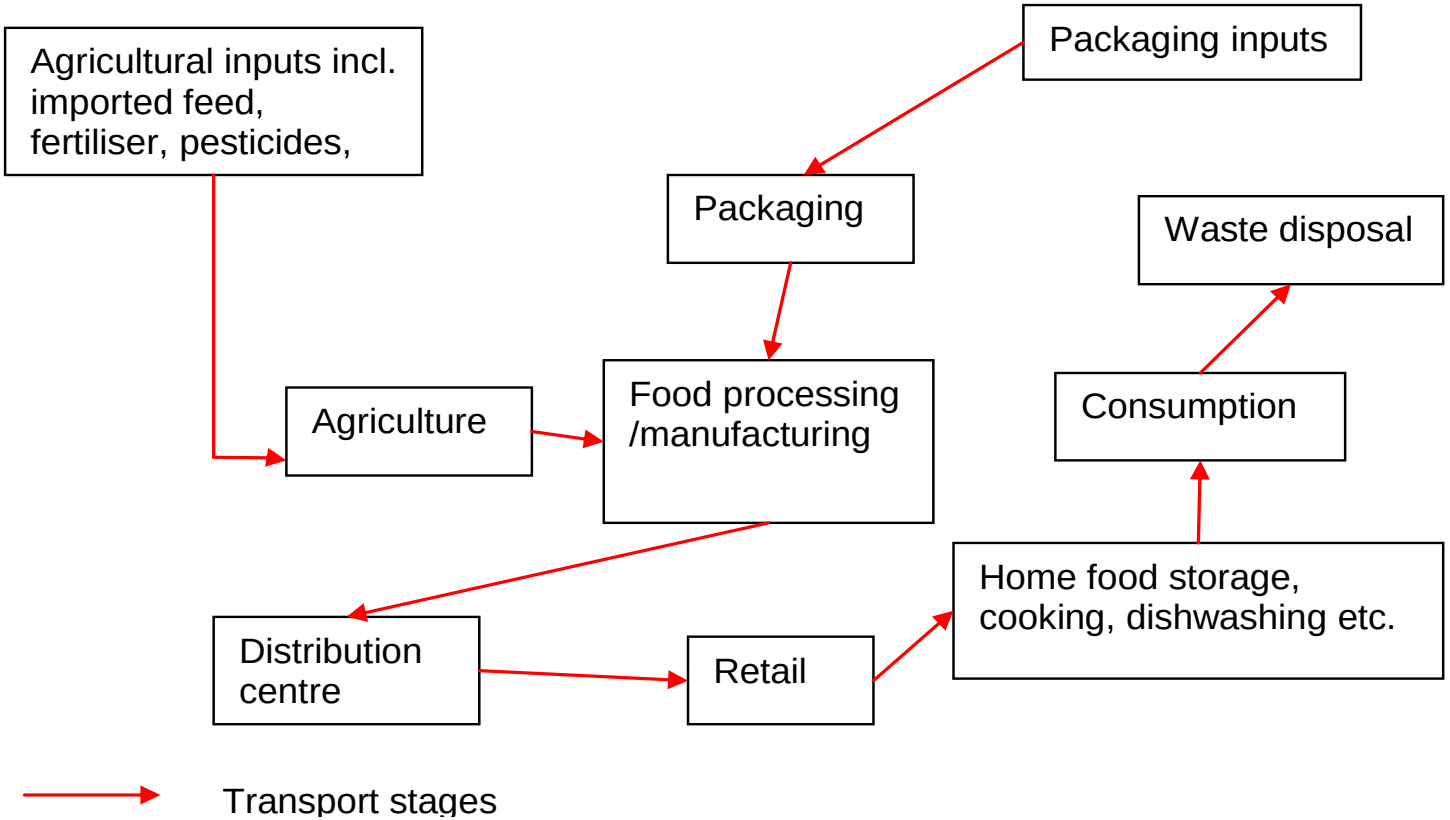
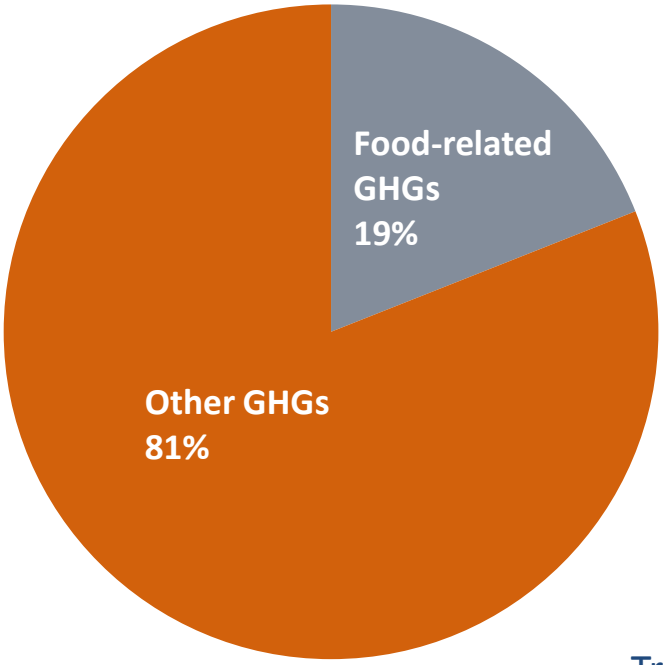
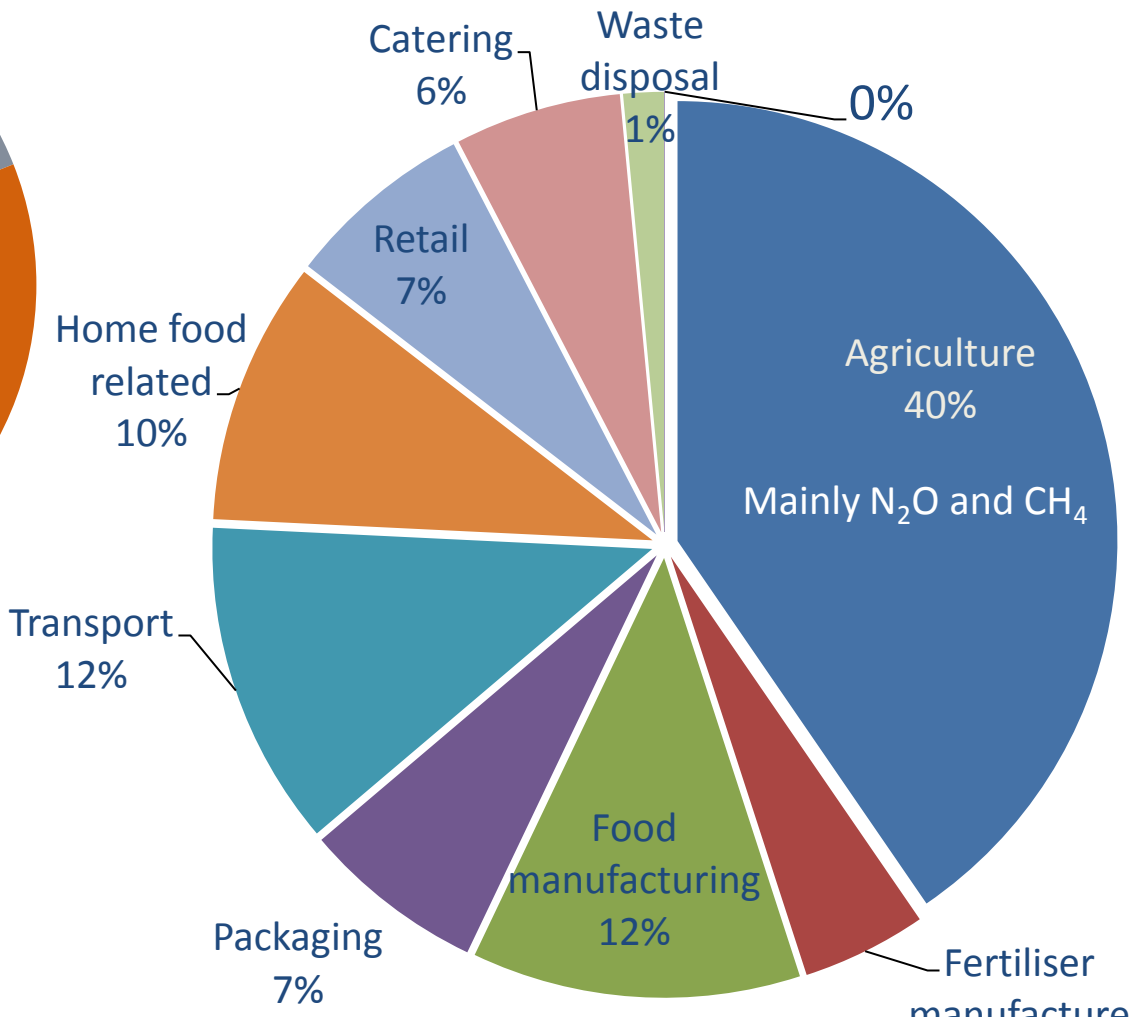
Each stage in the food system contributes emissions



National level studies of different food system stages (the UK as an example)



LUC attributable to UK consumption increases food's impacts by @40%



Source: Garnett T, 2008, Cooking Up a Storm, Food Climate Research Network

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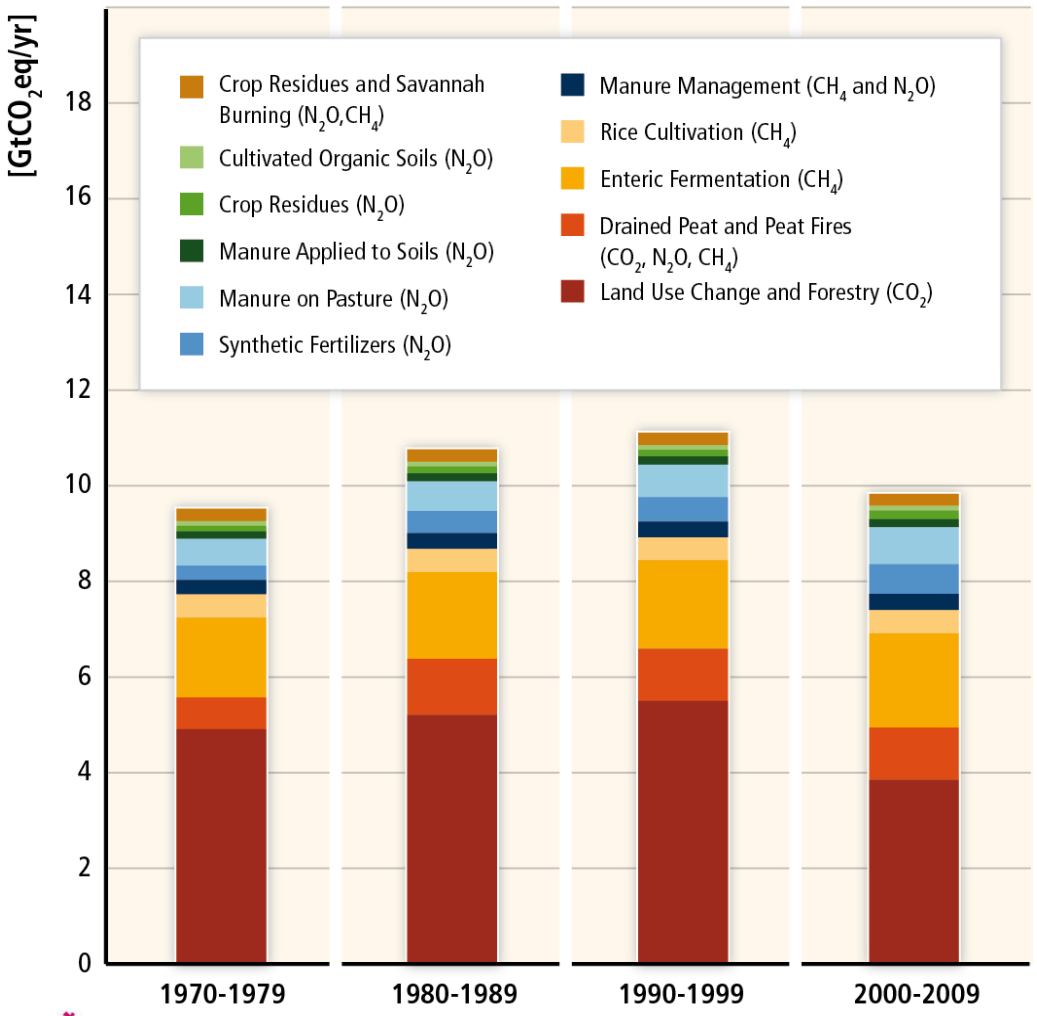
Agricultural emissions are rising -



…emissions from LUC are falling although still problematic… farming is responsible for 80% deforestation worldwide

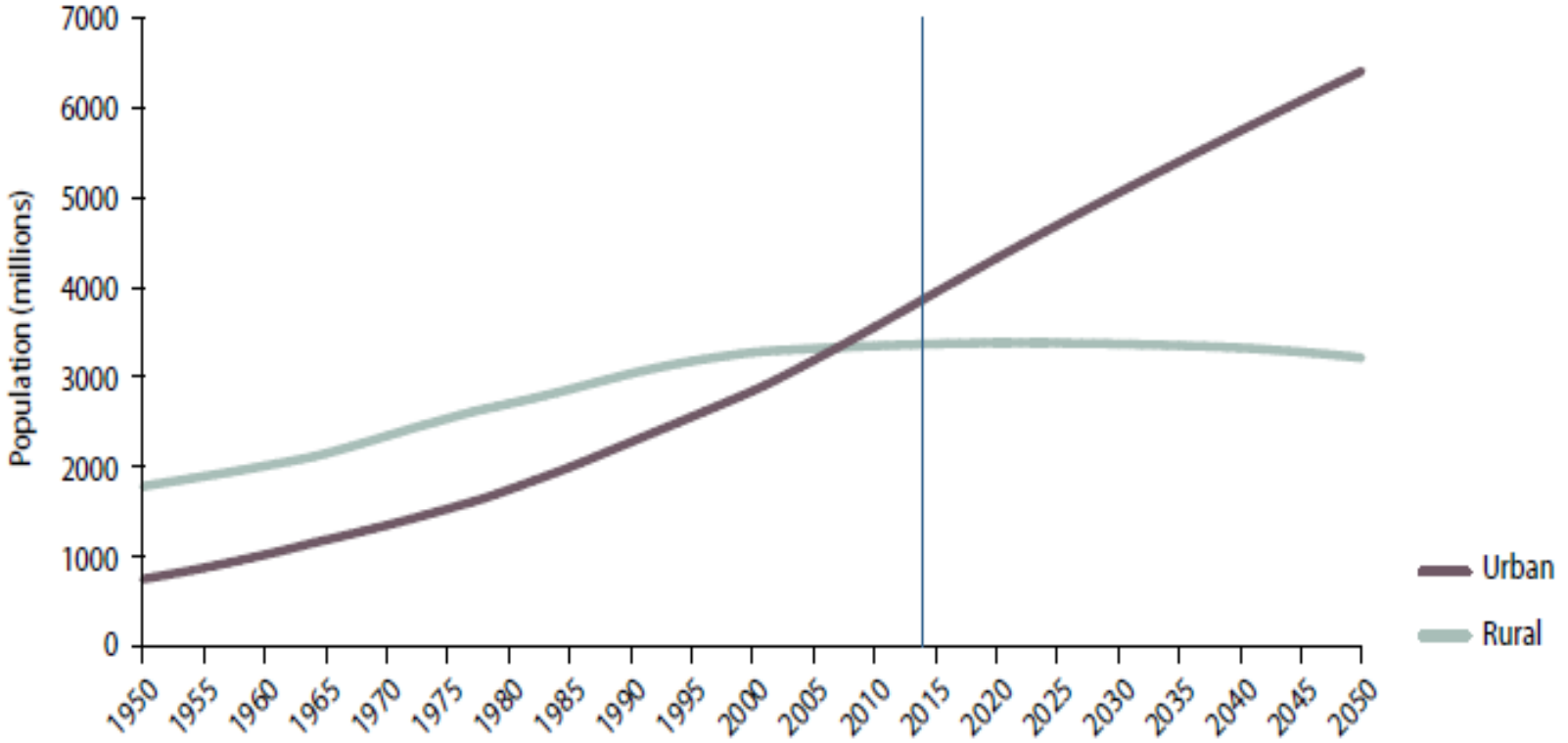
Livestock account for bulk of agricultural emissions - contribute to 14.5% global emissions total (FAO 2013).

Demand for animal products is rising

Source: Smith *et al.* (2014) – IPCC WGIII AR5

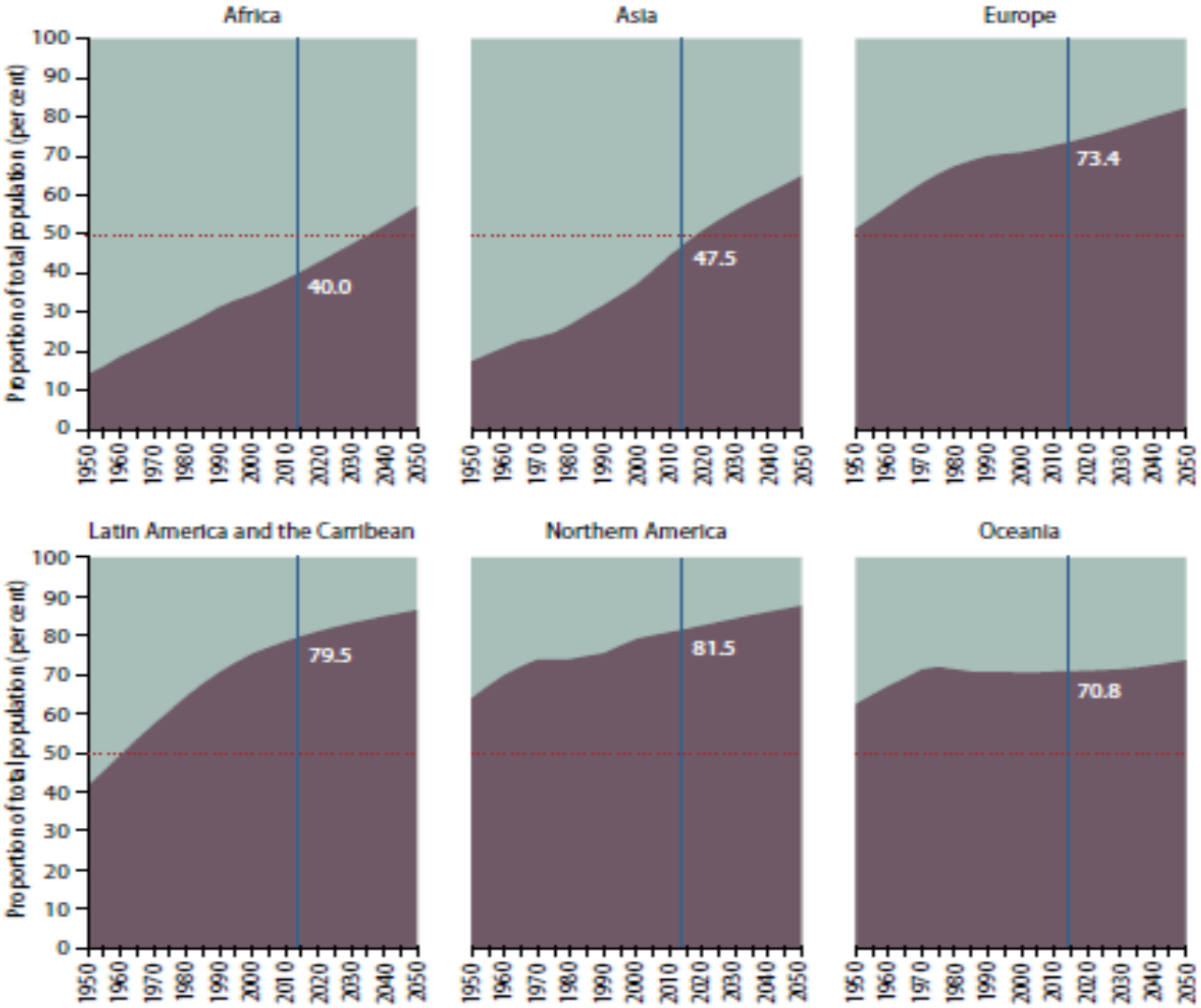
2. The food-climate-urban connection

Most people live in urban areas



Source: United Nations, Department of Economic and Social Affairs, Population Division (2014). *World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).*

(Although there is regional variation)



Source: United Nations, Department of Economic and Social Affairs, Population Division (2014). *World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).*

HOW people eat in these urban areas affects GLOBAL food GHGS because

- Most food produced now feeds urban citizens
- Cities are centres of power & influence – drive future trends:
  - How policy makers govern wrt agriculture & land use policy
  - What industry promotes
  - What people want

Urban food provisioning also affected by climate change

- **Direct impacts**
- Flooding &catastrophic events damage people directly, affect food transport systems; retail outlets, electricity & water supplies, the Internet (social security payments);
- Increasing temperature increases risk of food spoilage/food borne diseases – an issue where people don't have access to refrigeration. Refrigeration reduces food waste but is energy using. Temperature increases also affect food preferences

- **Indirect impacts**
- Affects production regions – undermines yields, increases variability, affects nutritional content
- Additional driver of migration – pace of change affects capacity of cities to absorb new populations.
- Water-food competition with other sectors?

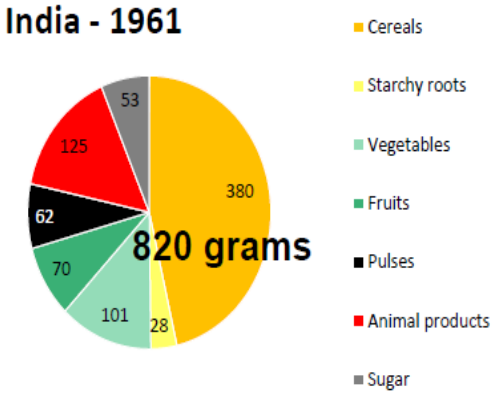
- **Urbanisation may also affect availability and quality of land for agriculture**

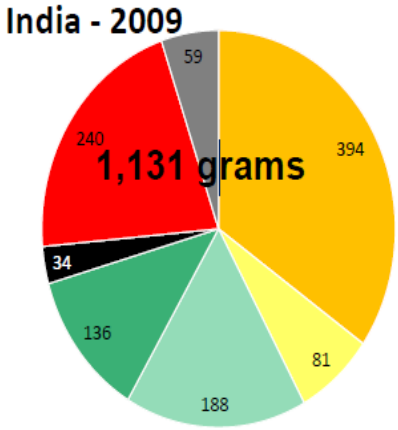
Another challenge…cities, climate, nutrition & health are connected

The nutrition problem is changing

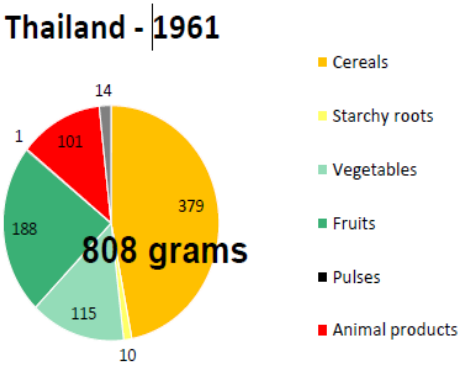
- **800 million** hungry
- **2 billion** overweight or obese
- **2 billion** with micronutrient deficiencies
- **The nutrition transition**: transition from traditional diets high in cereal and fiber to more Western pattern diets high in sugars, fat, and animal-source food.
- Implications for **health** & **climate**

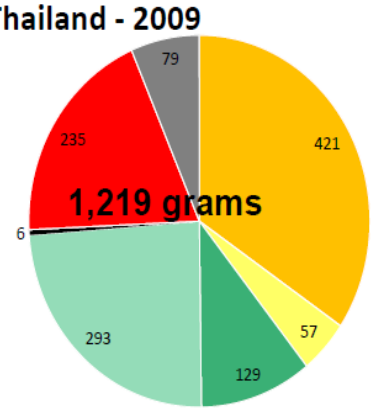
People are eating more – & more high-impact foods

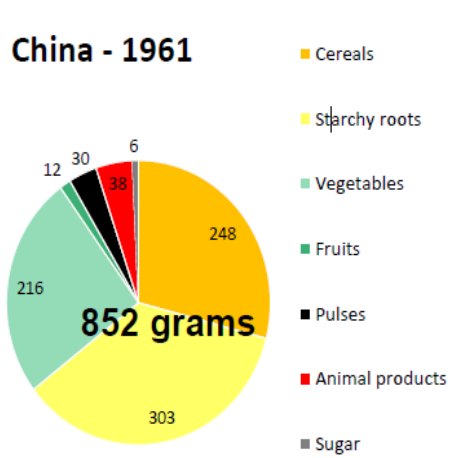


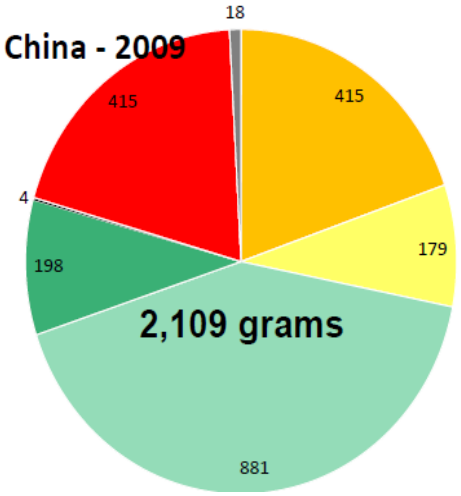


(Red = meat)









ODI (2014) Future Diets

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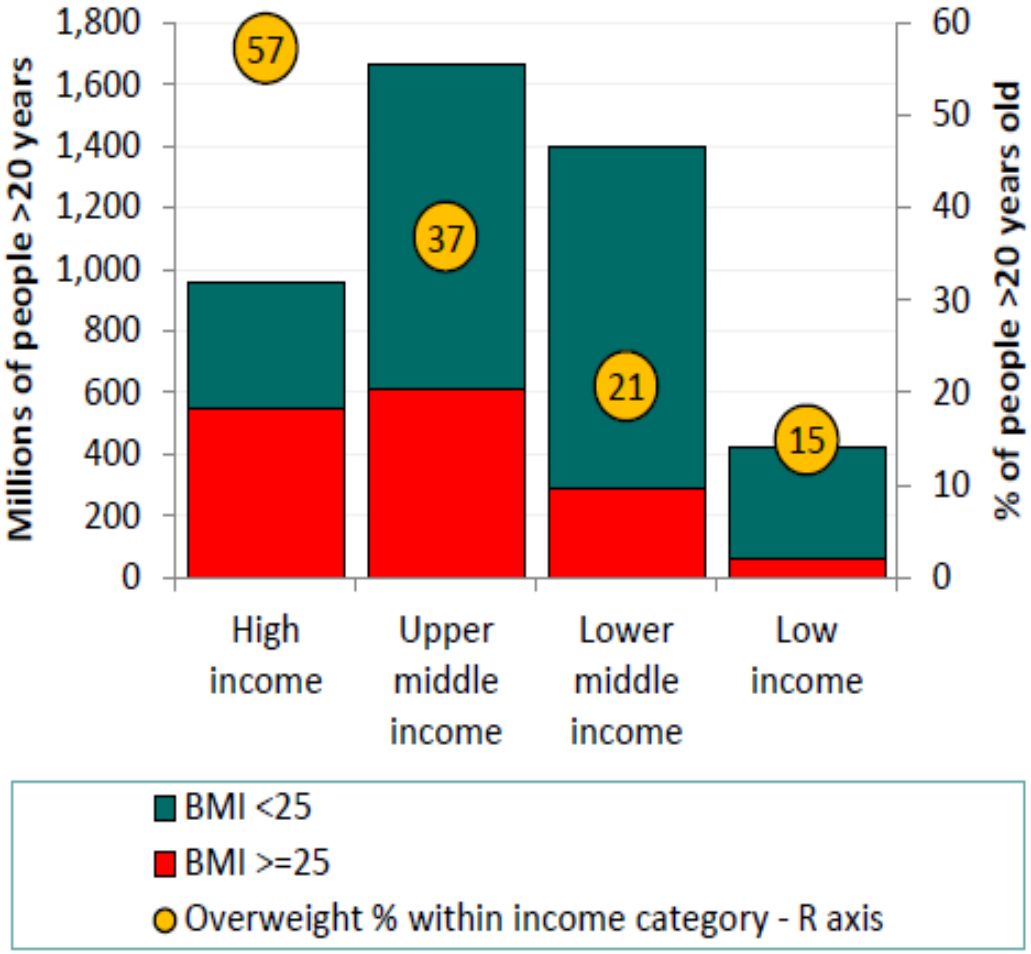
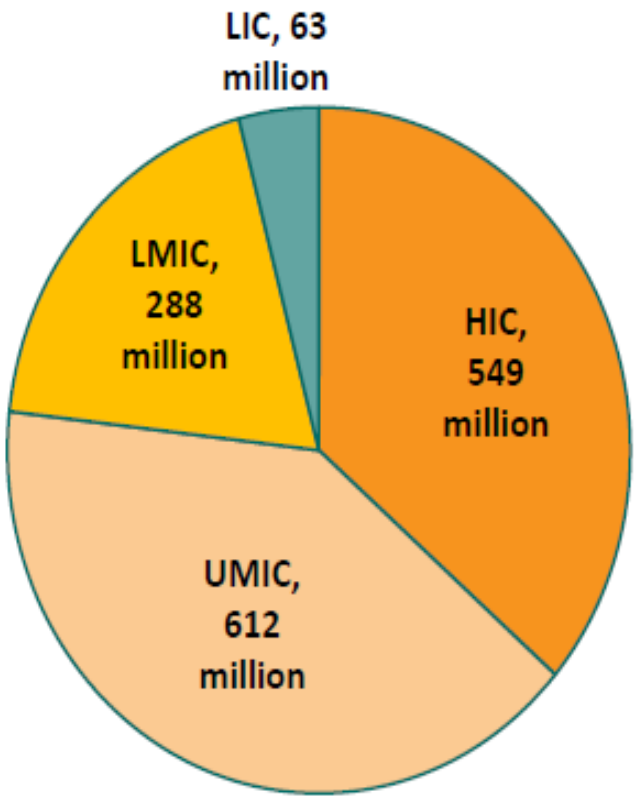
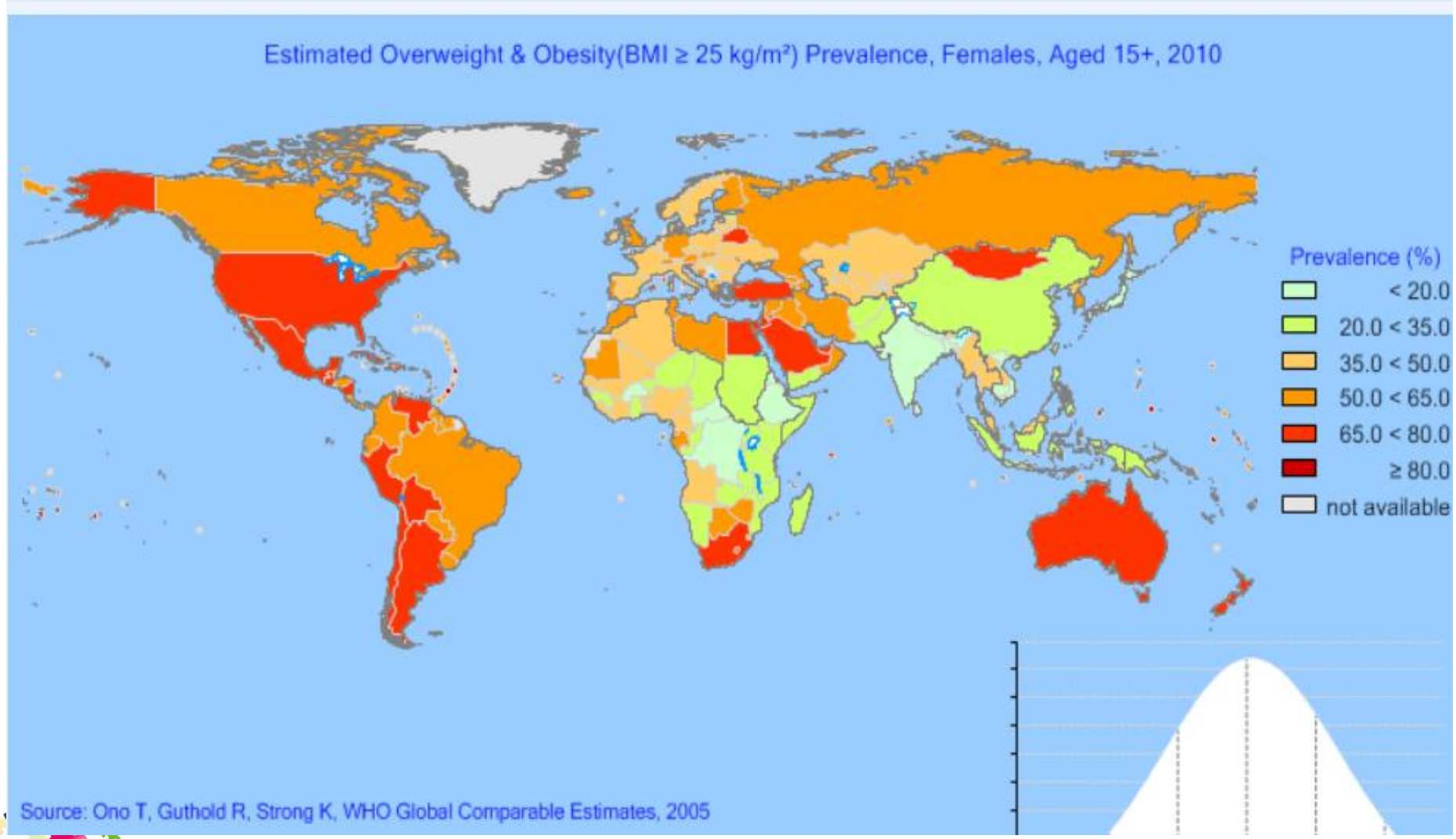
Most fat people live in developing countries





ODI (2014) Future Diets

Women – overweight prevalence -WHO 2010



https://apps.who.int/infobase/Comparisons.aspx?l=&NodeVal=WGIE_BMI_5_cd.0704&DO=1&DDLReg=ALL&DDLSex=2&DDLAgeGrp=15-100&DDLYear=2010&DDLMethod=INTMDCTM&DDLCateNum=6&TxtBxCtmNum=20,35,50,65,80&CBLC1=ON&CBLC3=ON&CBLC4=ON&CBLC6=ON&CBLC8=ON&CBLC10=ON&DDLMapsize=800x480&DDLMapLabels=none&DDLTmpRangBK=0&DDLTmpColor=-3342388

How does urbanisation affect diets?

Overall urban populations more likely to

- be overweight/obese than rural
  - Goryakina Y and Suhrckea M (2014). Economic development, urbanization, technological change and overweight: What do we learn from 244 Demographic and Health Surveys? Economics & Human Biology 14, 109–127
- And to eat more meat
  - Satterthwaite D, McGranahan G and Tacoli C (2010). Urbanization and its implications for food and farming Phil. Trans. R. Soc. B 365, 2809–2820

BUT it's complicated

On the one hand…

- Urbanisation fosters obesity and/or higher meat because:
  - Incomes can be higher (meat, dairy & packaged foods more affordable)
  - Energy dense foods more available (SMs, fast food outlets)…
  - … more exposure to marketing
  - Lifestyles more sedentary
  - Maybe less time to cook
  - They eat out more (correlation between eating out & consumption of junk food – JF often meat based)

On the other …

- Rural populations with high incomes also have poor eating patterns (eg US)
- Rural pops in HIC -more car dependent – cities more walkable
- Urban populations may be more educated = education & lower BMI are correlated
- *some* signs that high incomes correlated with lower meat in *some* countries Rivers Cole J & McCoskey S (2013). Does global meat consumption follow an environmental Kuznets curve? Sustainability: Science, Practice, & Policy, 9, 2
- Urban slum dwellers in LIC very food insecure

In other words

- Factors such as
- Income
- Education
- Technology (eg. supply chain infrastructure, access to TVs, transport)
- more significant than ‘urbanisation’ per se

Conclusion

- Challenge is to develop urban food systems that are:
- resilient in the face of CC, that enable urban centres to play their part in mitigating food related GHGs through their sourcing and dietary choices
- & that enhance food security and nutrition of urban pops at the same time.

Main messages

1. Focus on the food system as a whole
2. Urban demand drives GHG impact – and is vulnerable to climate change
3. Climate & health/nutrition need tackling together