Sustainable Urban Food.

The Kindling Trust

Igniting passion & fuelling action for social change

The Unsustainable City.

Greater Manchester's environmental impact:

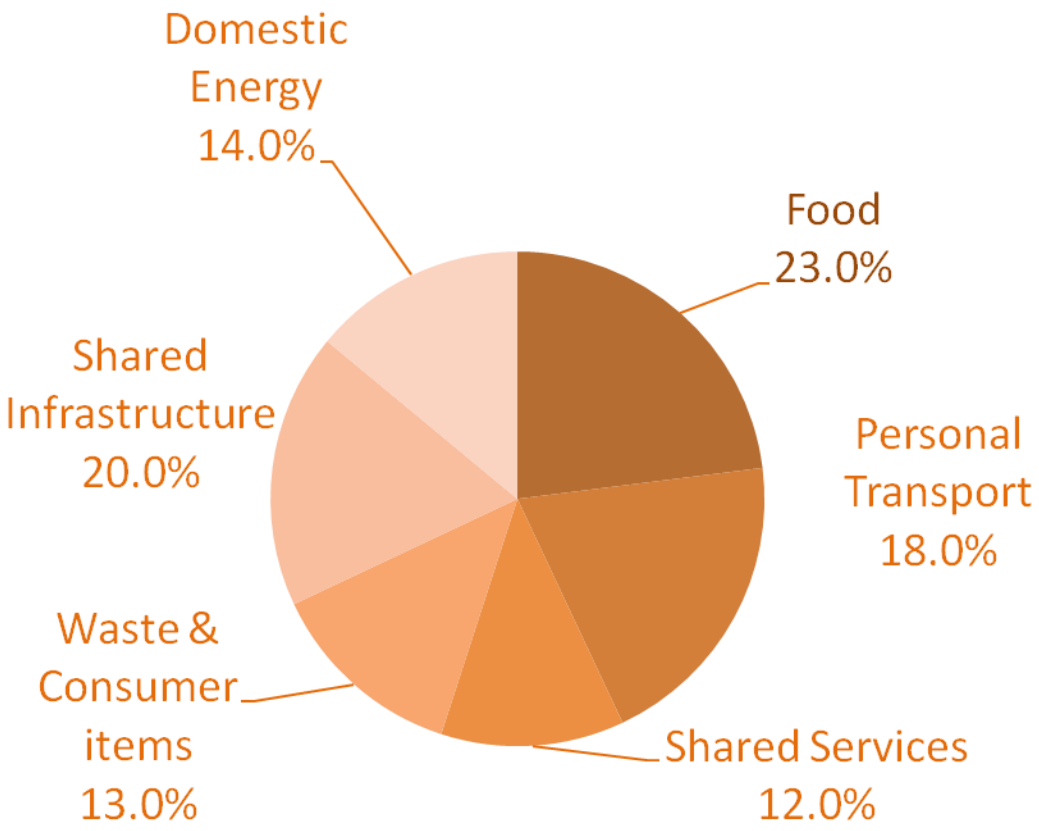
- Each of us Mancunians' produce 11.5 tonnes of (e) $C0_2$ per year.
- A Mancunian's eco-footprint is 5.45 global hectares.
- This is 3 times bigger than our fair 'earth share' of 1.8 global ha.
- Gtr Manchester's eco-footprint is 200 times its actual area.

Our Unsustainable Food System.

Impact of the food we eat :

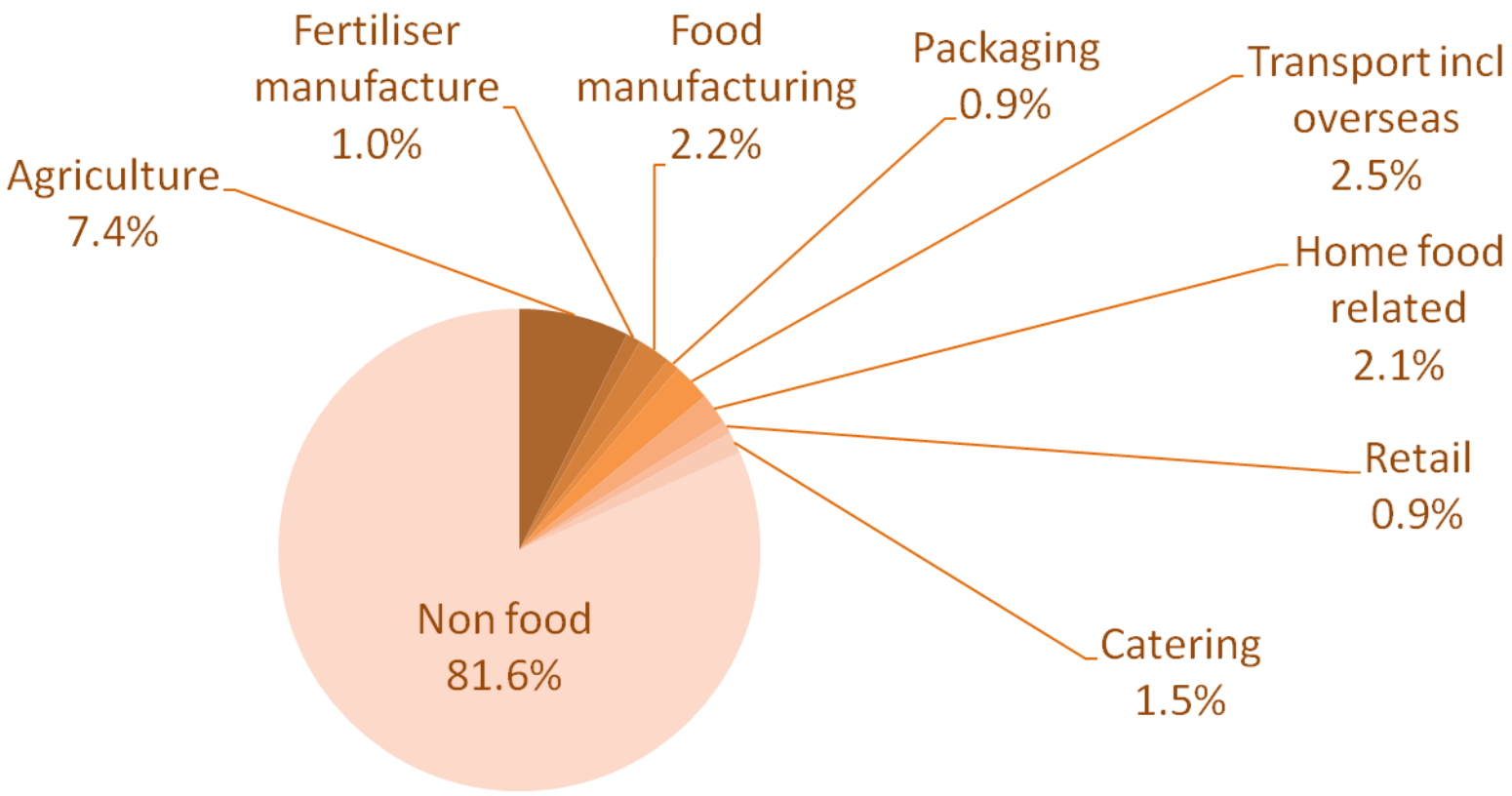
- The sectors with the largest eco-footprint are: food & home energy[(a)].
- Food production system responsible for ~ 20% of CO_2 (e) emissions[(b)].
- The use of HGVs to transport food has doubled since 1974 [(c)].
- There is a growing impact of air freighted fresh produce.
- Only 18% of adult Mancunians are eating the recommended minimum of 5 portions of fruit and vegetables a day [(d)].
- Approximately one third of all food bought in the UK is thrown away [(e)].

Carbon Footprint of a UK Resident:



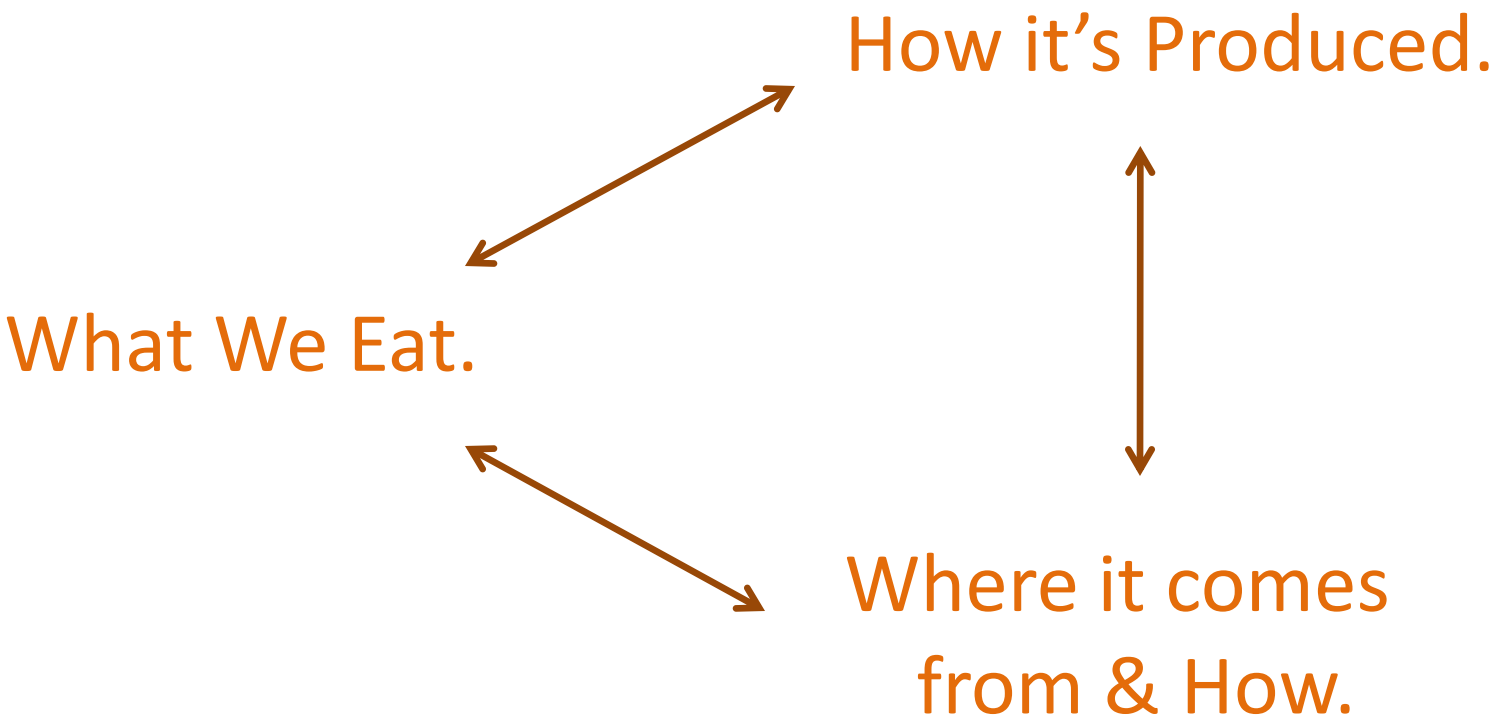
Greenhouse gas emissions of the average UK resident ,
Z-Squared, Only Planet, Manchester Climate Forum, September 2008

Carbon Footprint of the Food Chain:



Greenhouse gas emissions from the food chain, shown in relation to total UK greenhouse gas emissions
Food Climate Research Network, 2007

Making our Food more Sustainable:



What We Eat.

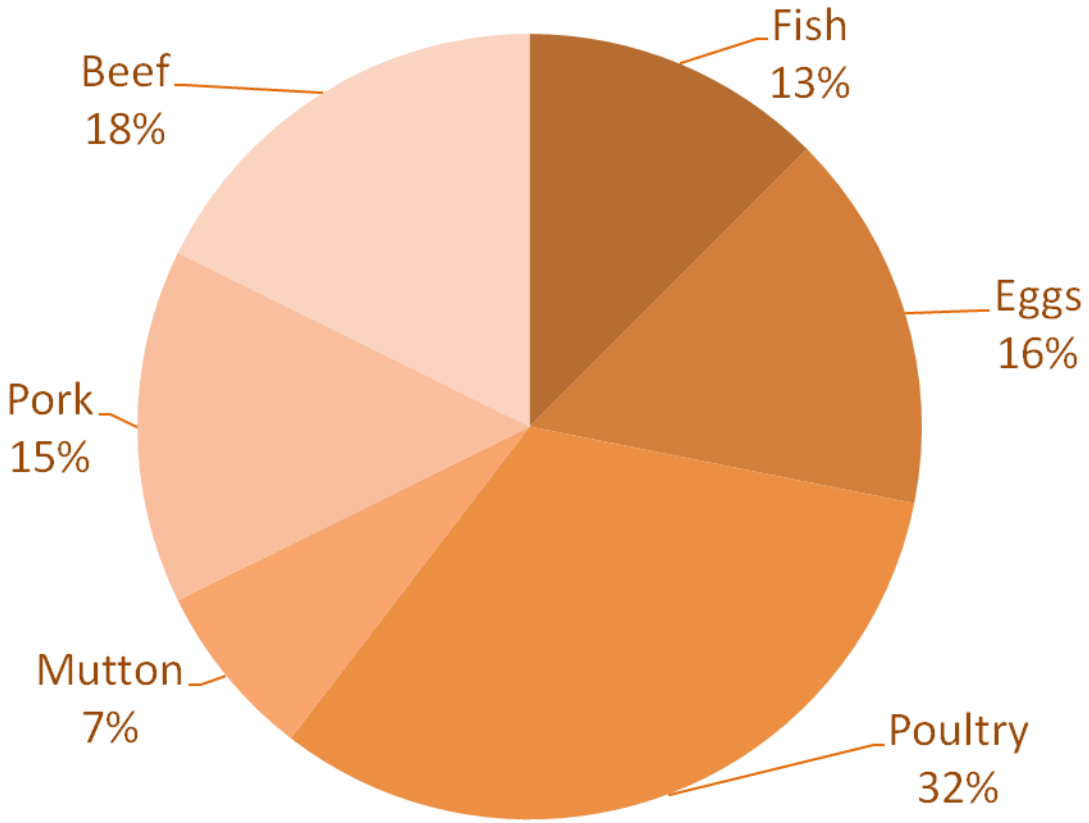
Climate Change & our Food Choices:

Meat and dairy account for around half of food's total greenhouse gas emissions[(f)].

Human-related CO_2 (e) emissions by food type:

- Meat and dairy ~ 9% [(g)]
- Fruit and vegetables ~ 2.5% [(h)]
- Alcoholic drinks ~ 1.5% [(h)]

UK Livestock Consumption:



Carbon Footprint of Some Meats:

Single cheeseburger - 3 - 6 kg CO_2 [(j)]

Kilo of lamb ~ 7 kg CO_2 e[(k)]

Kilo of beef ~ 6.8 kg CO_2e[(k)]

Kilo of pork ~ 3 kg* CO_2e[(l)]

Kilo of chicken ~ 1.5 kg* CO_2 e[(l)]

*** Emissions in relation to feed only.**

Meat and Resource Use.

1 tonne of feed could produce roughly:

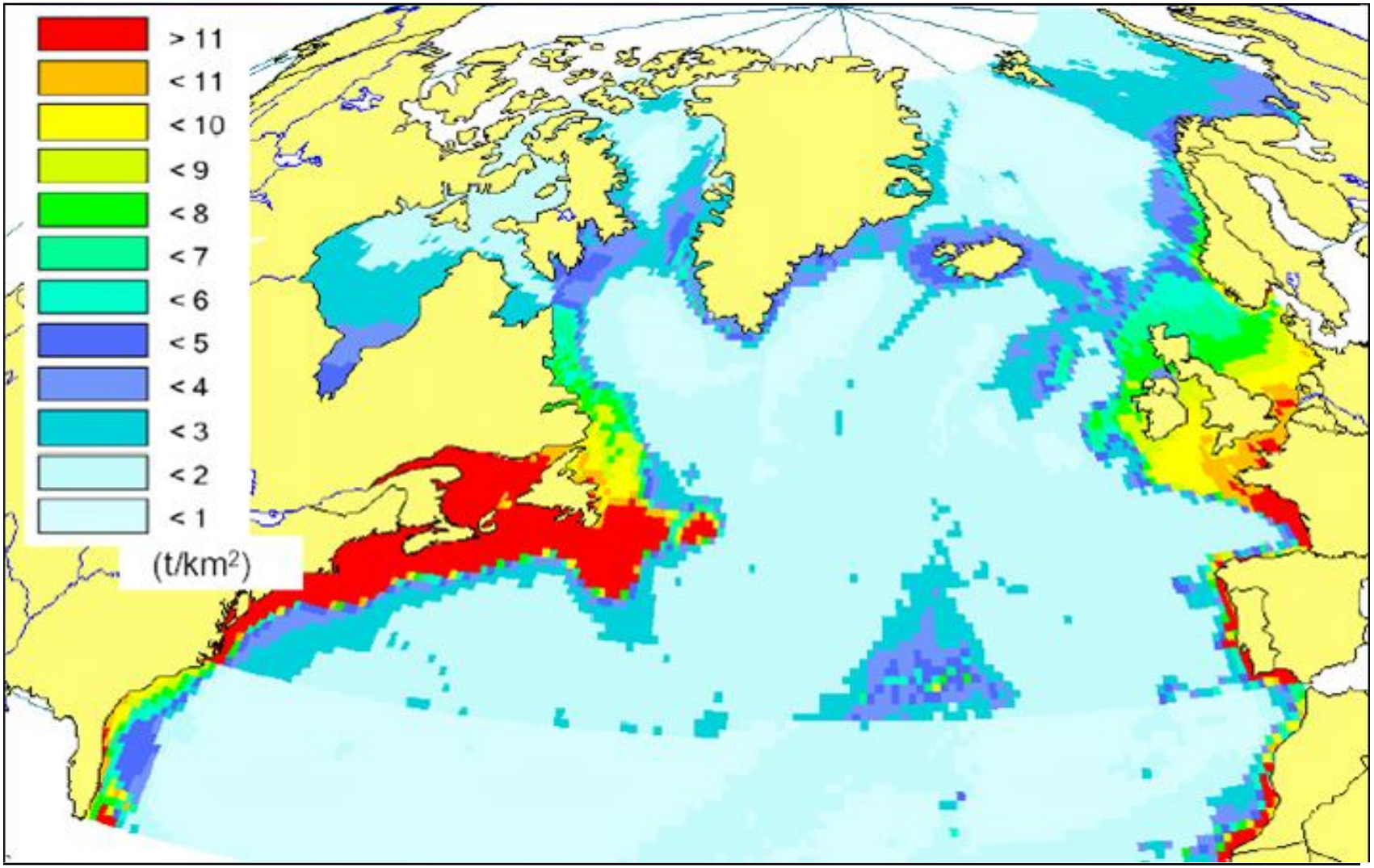
150 Kg of beef.

300 Kg of pork.

500 Kg of chicken.

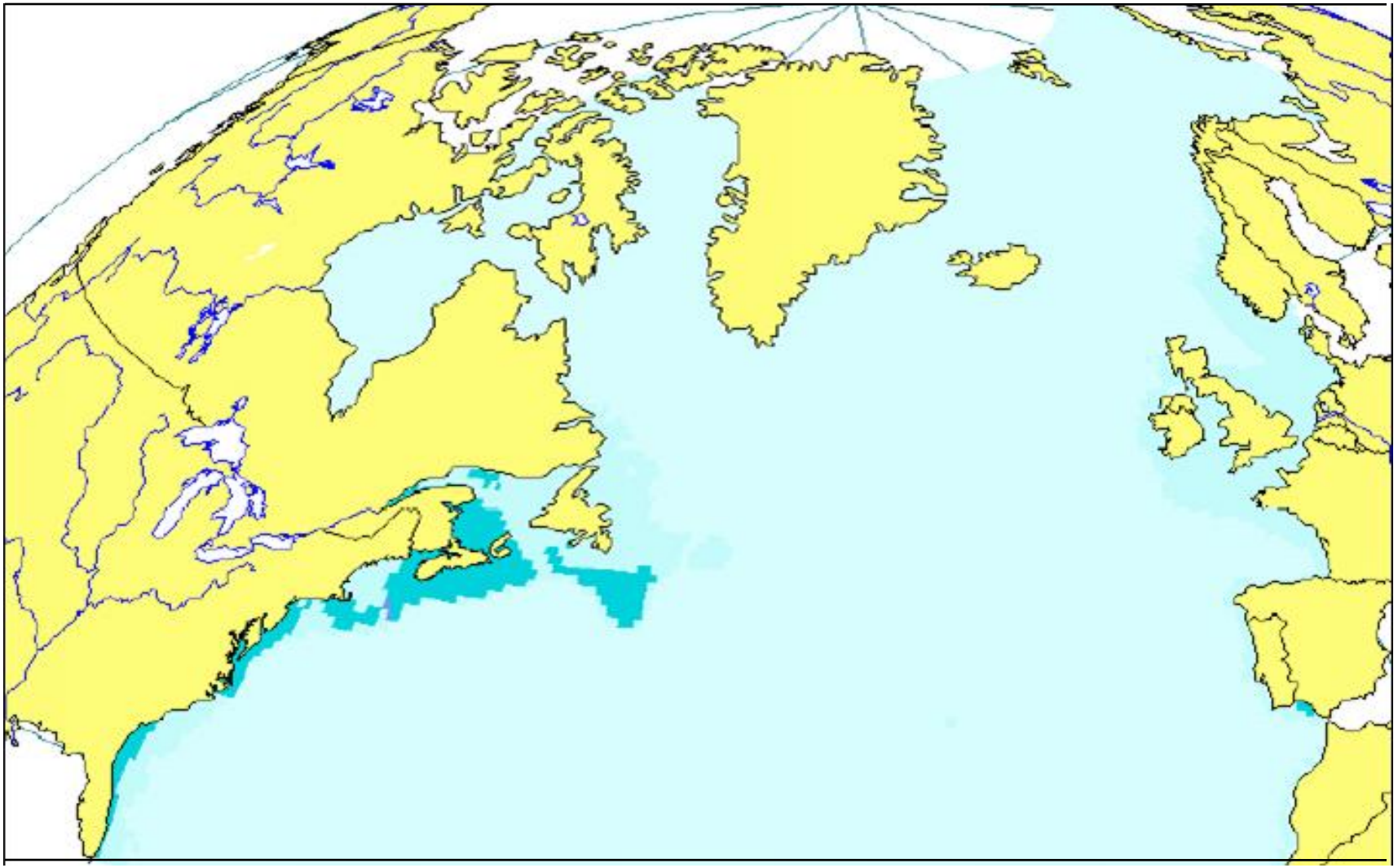
Almost 1,000 Kg of farmed fish.

Biomass of Table Fish in 1900.



V.Christensen, SAUP

Biomass of Table Fish in 1999.



V.Christensen, SAUP

Food and Land Use.

Food:	Land per kg (m^2):	Calories per kg:	Calories per m^2:
Beef	20.9	2,800	133
Pork	8.9	3,760	423
Eggs	3.5	1,600	457
Milk	1.2	640	533
Fruit	0.5	400	800
Vegetables	0.3	250	833
Potatoes	0.2	800	4,000

PW Gerben-Leenes et al (2002) Agriculture, Ecosystems & Environment, 90, 47-58

How it’s Produced.

Carbon Footprint of Some Vegetables:

Kilo of organic tomatoes:

Air-freighted Kenyan ~ 10 kg CO_2 e

British Hothouse ~ 2-4 kg CO_2 e (k)

Trucked Spanish ~ 1 kg CO_2 e

British Outdoor ~ 0.5 kg CO_2 e

Kilo of potatoes - ~ 0.18 Kg CO_2 e (k)

Determining natural resource impacts of African Horticultural Exports.
The Climate Impact of Air-freighted Fresh Fruit and Vegetable Imports.
Zoe Wangler, July 2006

Climate Change and Organic Food:

- UK organic farming is on average 15% more energy-efficient than conventional farming.

- Farming organic corn uses 60% less energy than regular corn [m] .

- Organic meat farming cuts energy use by almost 30% on average.

- Farming organic chicken uses about 30% more energy than farming regular chicken, on average.

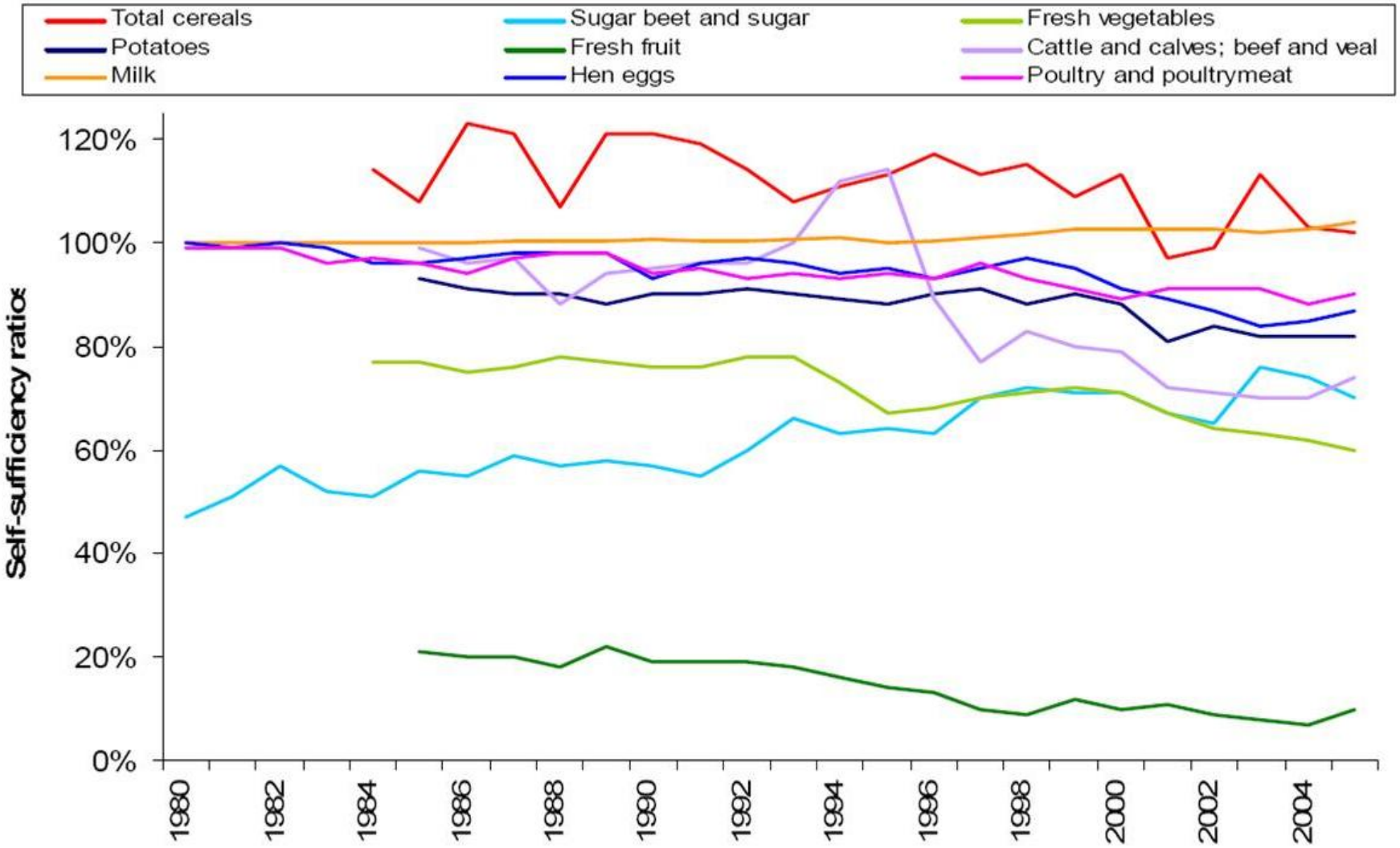
http://www.bbc.co.uk/bloom/actions/organic.shtml.

Where it comes from & how.

Where does our food come from?:

- The UK is more self sufficient than would appear: 60% overall.
- UK largest net importer of food & drink among the EU states[n].
- 95% of fruit & 50% of vegetables eaten in the UK are imported[o].

Self-sufficiency Ratios for Some Foods:



DEFRA, Agriculture in the United Kingdom, 2005

Climate Change and Local Food Production:

- Almost half of the CO_2 emissions from transporting fruit and veg consumed in the UK are due to the 2% of fruit and veg that is air-freighted.

- Locally grown spring onions and delivered to your door by a home delivery service produces approximately 300 times less CO_2 emissions than if they were flown in from Mexico and brought from a supermarket in a shopping trip by car. (p)

- Air-freighted Kenyan green beans can be over 20 times more greenhouse gas intensive than their UK seasonal counterparts.

- A vegetarian diet composed entirely of air-freighted or greenhouse-grown greens and dairy could conceivably have as great a climate impact as a local meat-eater's.

www.bbc.co.uk/bloom/actions/localseasonalfood.shtml

If its not organic it can’t be local:

- 63 % of primary energy used in the UK for agriculture is imported.

- 70% of overall EU animal feed is imported underlines the European agriculture’s dependency on external inputs.

- 69% of pesticides and 37% of fertiliser (up from around 10% in the 1970s) is imported.

UK Government research from 2005 & 2006.

An inconvenient truth about food - neither secure, nor resilient, Soil Association,2008

Making Food More Climate Friendly:

1. Reduce the amount of food wastage.
2. Reduce meat consumption.
3. Organic & low carbon agriculture.
4. Avoid air freighted produce.
5. More local growing, therefore seasonal.

Making Food More Sustainable:

1. Healthy.
2. Fair trade.
3. More humane.
4. Bio-diversity.
5. Water security.
6. Food security – local & seasonal produce.
7. Thriving & diverse local economies.

How we Shop:

- Four supermarkets control 75% of UK food retailing, with small independent retailer's share of the market reduced to 6%.

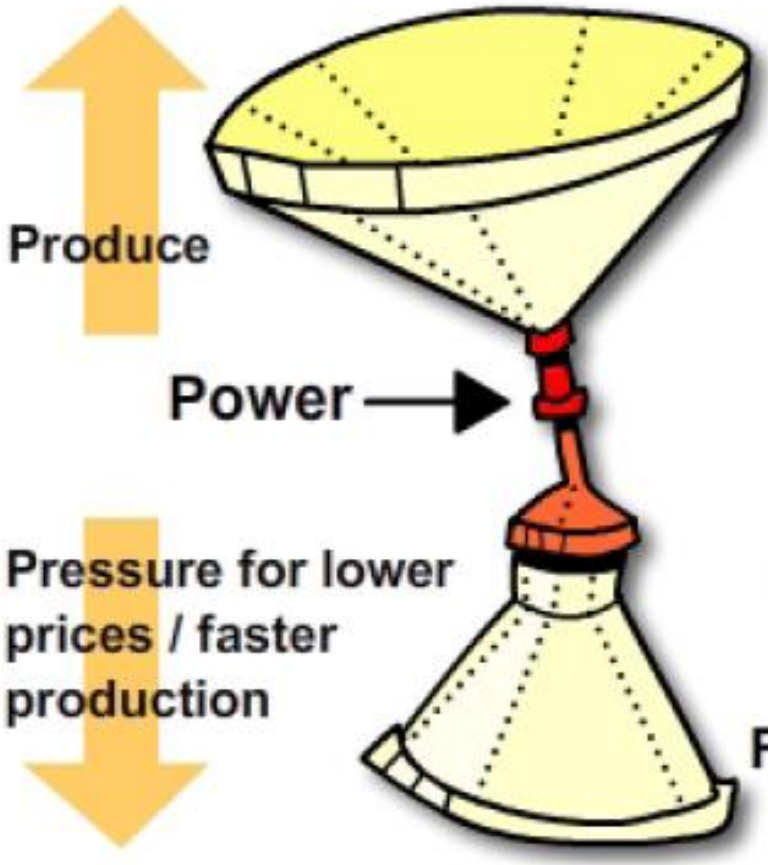
- 1 in every 3 meals eaten outside the home are in publicly funded institutions (schools, hospitals, care homes, etc.) [q].

- Every £1 spent with a local shop is worth £1.76 to the local economy, but only 36p if it is spent with a supermarket chain. [r]

- Within a 10-mile radius there is a net average loss in retailing of 270 local jobs for each new out-of-town supermarket. [s]

- Supermarkets have consistently been found to pay suppliers nearly 4% below the average price paid by other retailers. [t]

The Food Supply Chain Bottleneck



160,000,000 Consumers

110 Supermarket Buying Desks

160,000 Suppliers

3,200,000 Farmers & Workers

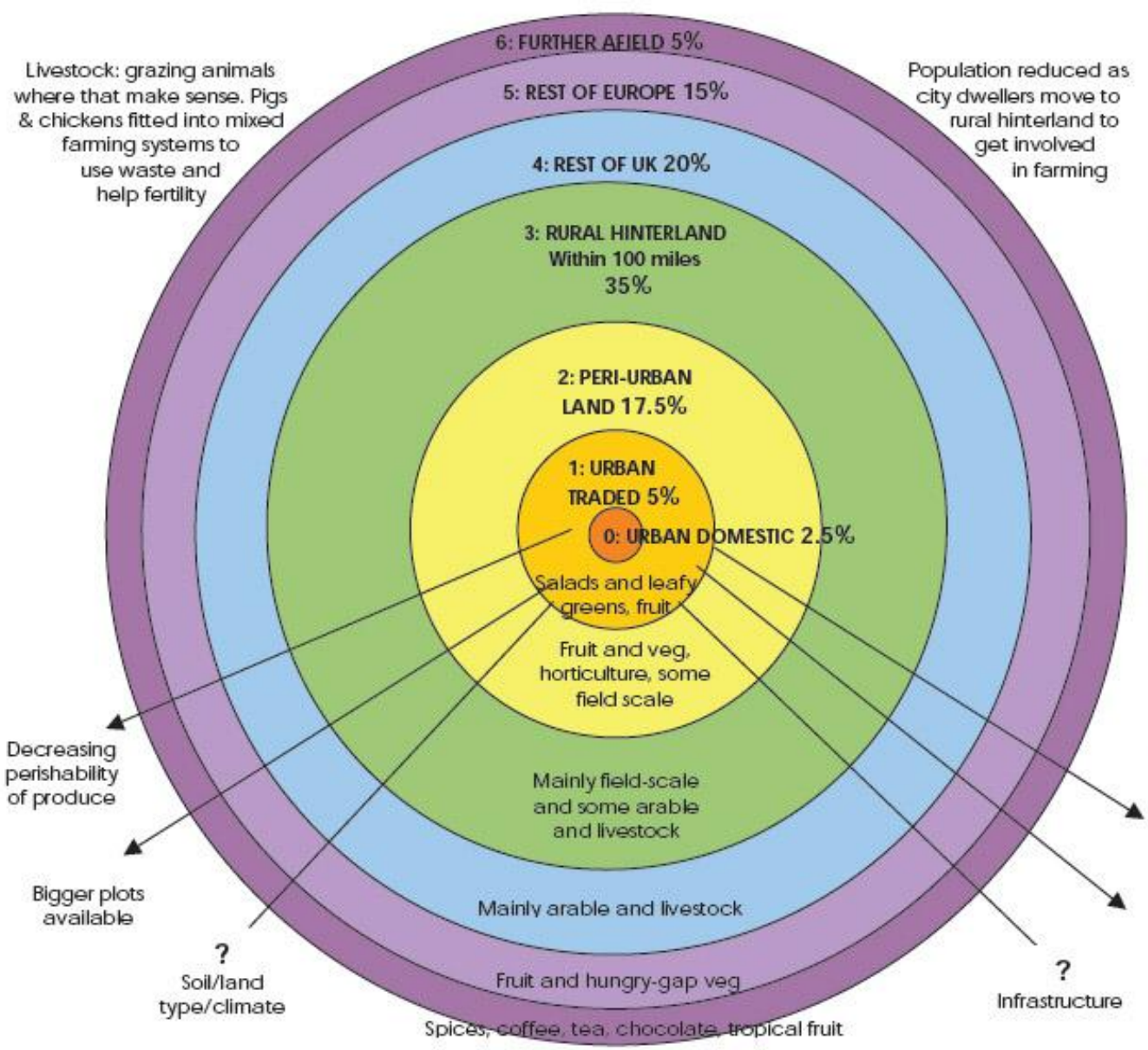
Source: Grievink (2003)

Sustainable Food Enterprise.

- Localised.
- Efficient –closed-loop, therefore low carbon.
- Diverse & interdependent and therefore resilient.
- Bio- mimicry.
- Responsive & flexible.
- Democratic and participatory.

Communities Delivering Sustainable Food.

GROWING COMMUNITIES' FOOD ZONE DIAGRAM: What a sustainable re-localised food system might look like in the future.



Zone	Target contribution (%)	Box scheme contribution veg	fruit	all
0	2.5	0	0	0
1	5	5	0	4
2	17.5	0	0	0
3	35	69	25	54
4	20	3	3	3
5	15	23	50	32
6	5	0	22	7

The City as a Resource:

- People.
- Economic resources & economic density.
- Water.
- Waste heat & light.
- Organic matter – compost & sewage.
- Waste materials for fuel.
- Transport infrastructure.

What is Lacking?

- Suitable land & soil.
- Political will & legal empowerment.
- Growing expertise & knowledge.
- Scale & replication.

What Else Needs to be Taken into Account:

- What people eat, how & when.
- Legal & financial constraints.
- Growing requirements:
  - Soil or other growing medium.
  - Weather. (Seasonality)
  - Nutrients.
  - Pest & disease
  - Pollination.
  - Harvesting.

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www.kindling.org.uk

References:

Presentation References:

a) Towards a One Planet Region. CURE. May 2006 . Page 6

b) Z-Squared, Only Planet, Manchester Climate Forum, September 2008h

c) www.guardian.co.uk/news/2005/jul/15/food.greenpolitics

d) Manchester JHU Food Futures Strategy.

e) www.lovefoodhatewaste.com

f) Garnett. T. 2008. Cooking up a storm-Food, greenhouse gas emissions and our changing climate. Food Climate Research.

g) Food and Agriculture Organisation of the United Nations. 2006. Livestock's Long Shadow – Environmental Issues and Options. Rome.

h) Kath Dalmeny, Sustain, FeedingManchester presentation, Slide 41, 24th October 2009.

i) http://www.timesonline.co.uk/tol/news/environment/article6891362.ece

j) http://openthefuture.com/cheeseburger_CF.ht

k) http://www.timesonline.co.uk/tol/news/environment/article6350237.ece ml

l) http://www.scientificamerican.com/article.cfm?id=kosher-carbon-footprint

m) Environmental Management, 2008

n) http://www.cattlenetwork.com/Dairy-Carbon-Footprint-Dropping/2008-10-13/Article.aspx?oid=566561

o) MAFF, 2001, Energy use in organic farming systems.

p) Sustain & EFRC, 2001, Eating Oil – Food in a changing Climate.

q) Kath Dalmeny, Sustain, FeedingManchester presentation, Slide 11, 24th October 2009.

r) www.neweconomics.org/gen/news_buyinglocalworth400percentmore.aspx

s) Towards Environmental Sustainability in East Manchester, MERCi, 2002

t) http://keepchorltoninteresting.org/whats-wrong-with-supermarkets

References:

Additional Comments References:

(i) Towards a One Planet Region. CURE. May 2006 .

(ii) www.britishcouncil.org/climatechange-briefing-report-cities.doc

(iii) http://en.wikipedia.org/wiki/Global_hectare

(iv) www.bbc.co.uk/food/food_matters/foodmiles.shtml

(v) http://news.bbc.co.uk/1/hi/uk/4684693.stm

(vi) www.bbc.co.uk/food/food_matters/foodmiles.shtml

(vii) Manchester JHU Food Futures Strategy, Page 3.

(iix) www.lovefoodhatewaste.com

(ix) Food Climate Research Network, 2007

(x) An inconvenient truth about food – Soil Association

(xi) www.bbc.co.uk/bloom/actions/eatinglessbeef.shtml

(xii) New Scientist, 2007

(xiii) http://www.bbc.co.uk/bloom/actions/organic.shtml

(xiv) Bellamy P et al, National Soil Resources Institute, carbon losses from all soils across England and Wales 1978-2003' N*ature, Vol 437, 2005*

(xv) Stopping The Great Food Swap - Relocalising Europe's Food Supply, Dr Caroline Lucas MEP, 2001.

(xvi) Tiessen, 1995; Steen, 1998