Introduction to Rurban Revolution Project

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Aims for today

- Inform you of what we've got planned and inform us, providing a scientific steer on our work

- Identify synergies between our plans and your research – where can we connect what we are doing now

- Build understanding and networks for future work together pursuing other opportunities

Who's in the room?

The basics

~£800k over next two years (April 2019 to March 2021)

Funded by 'Resilience of the UK Food System in a Global Context' Third Call, Global Food Security Programme (BBSRC, ESRC, NERC & Scottish Government)

www.lancaster.ac.uk/lec/rurbanrevolution

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Global Food Security
Sustainable, healthy food for all

What do we mean by "rurban"?

rurban = rur(al)+(ur)ban

Bringing the rural into the urban: increasing green 'natural' spaces and agricultural food production in the built environment

What do we mean by "rurban"?

Mike McBey, Flickr

Who: Community led Corporate

How: Low tech high tech

Where: Private gardens, public spaces, disused spaces, redevelopment

What: Focus on fruit and vegetables

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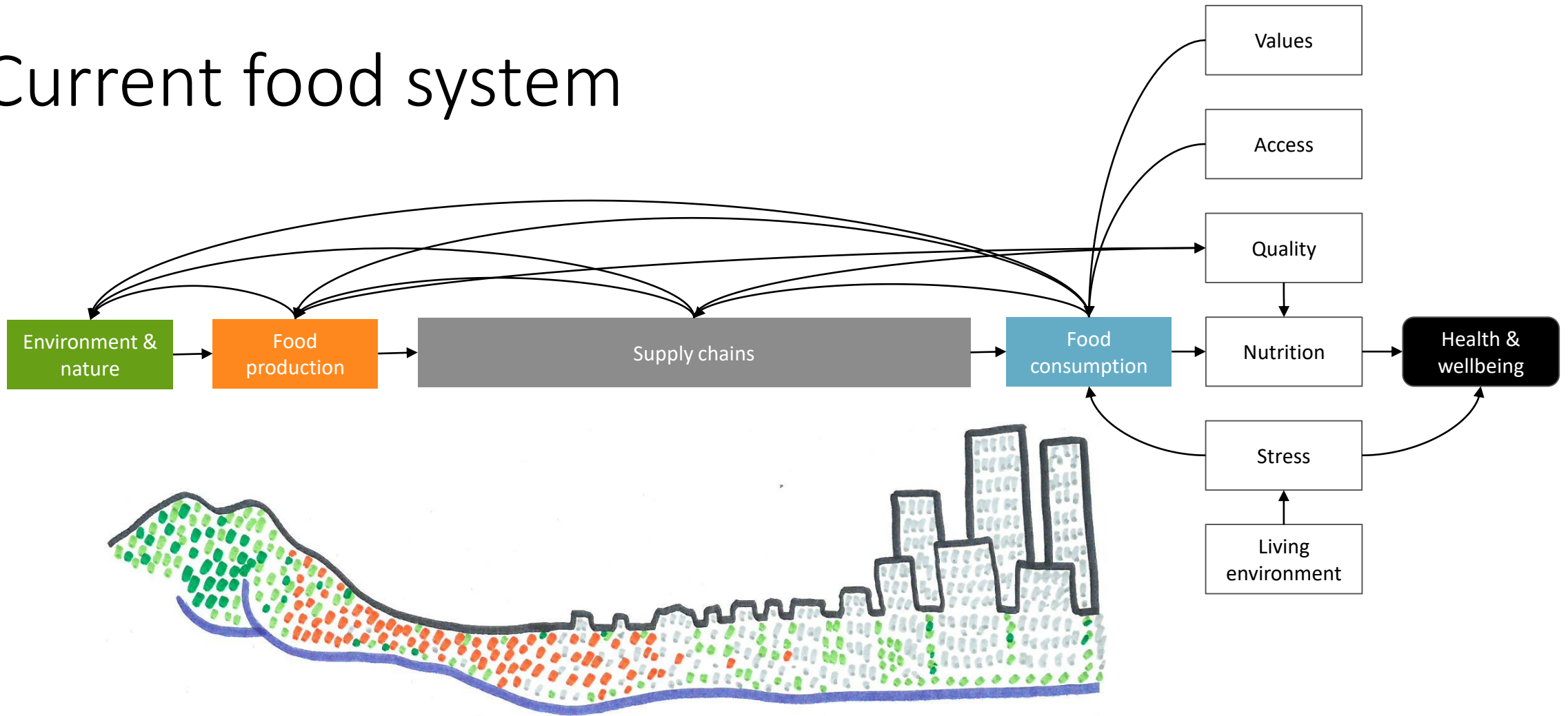Sustainable, healthy food for all

Why are we interested in the idea of upscaling greening and growing in urban contexts?
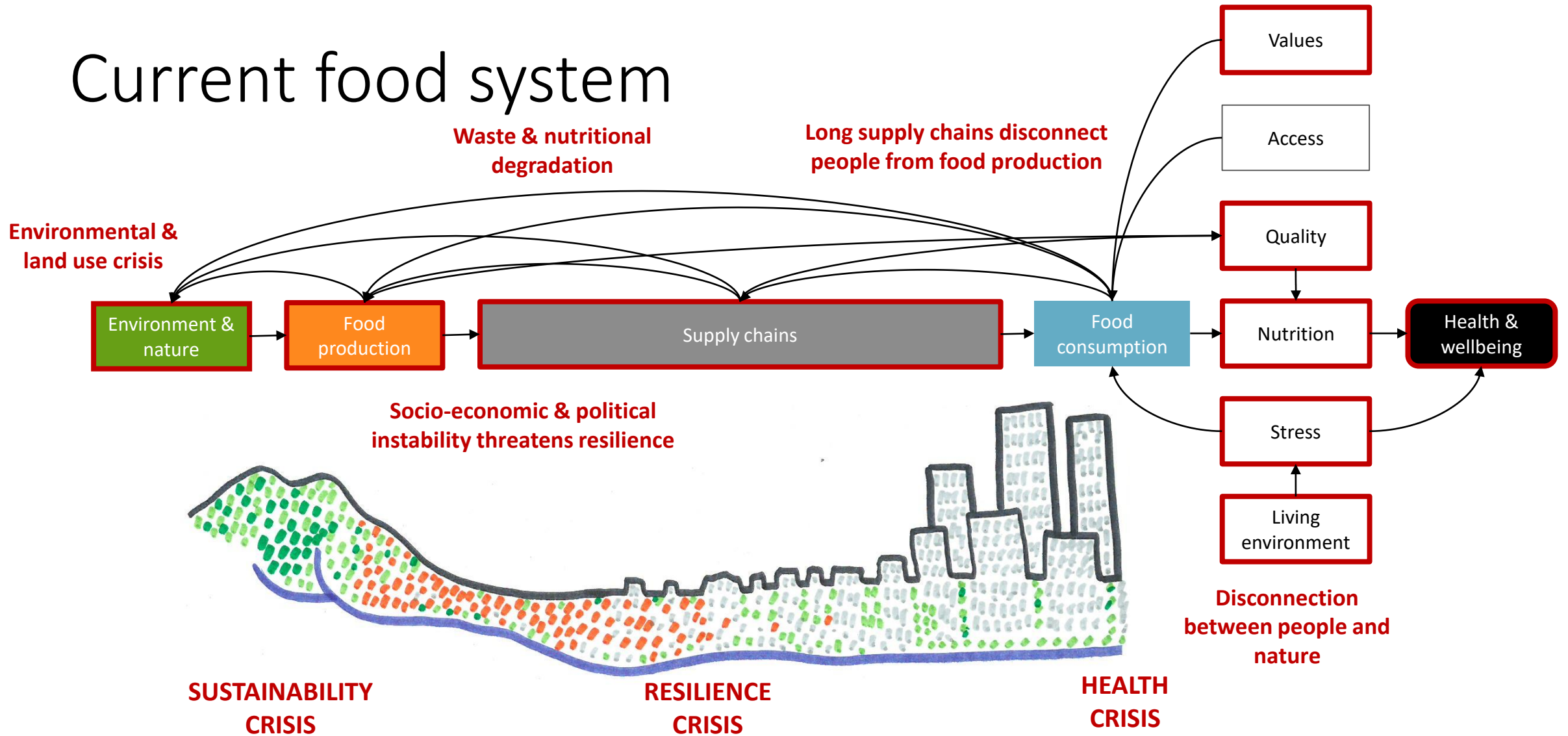
Is this a holistic leverage point for food system transformation towards a healthier, more sustainable, more resilient food system?
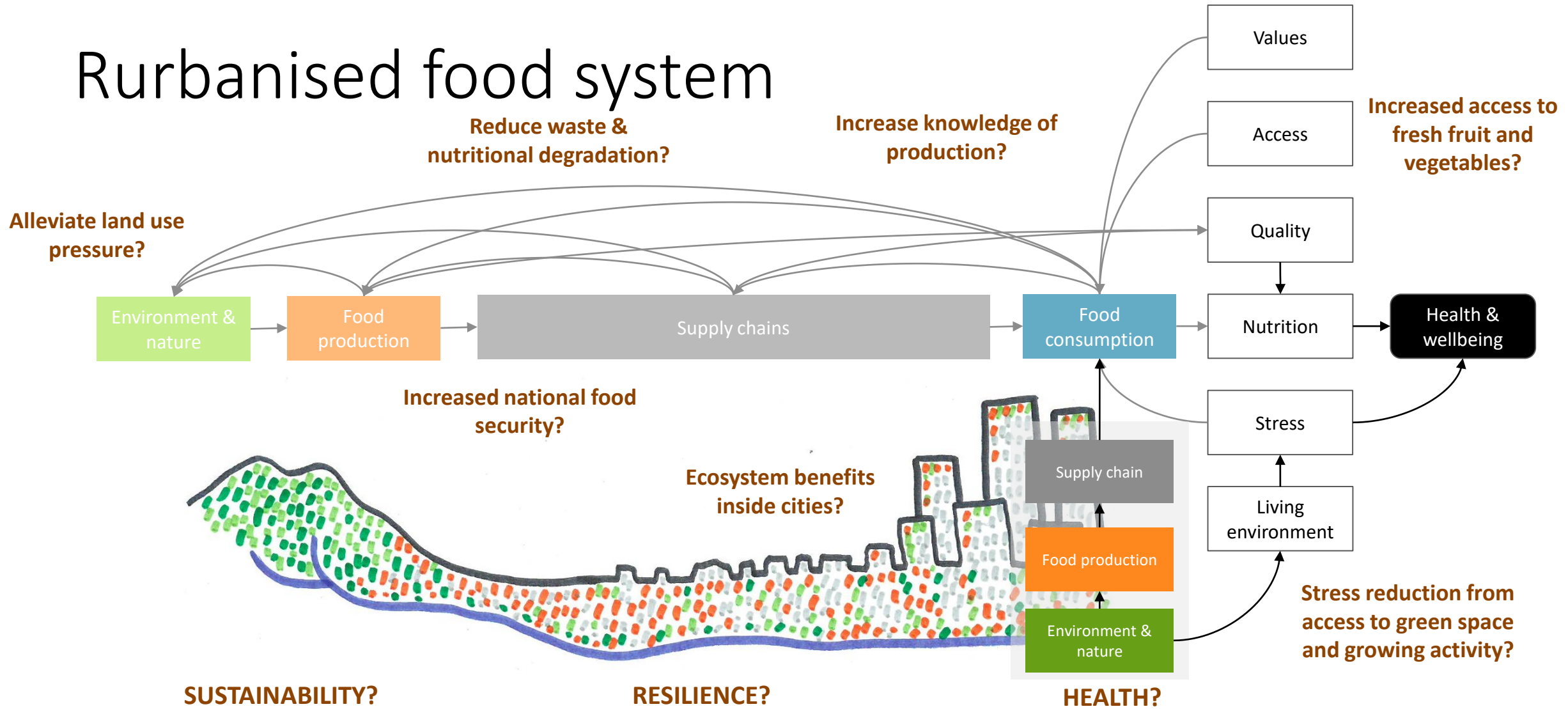
Current food system

Current food system

Waste & nutritional degradation

Long supply chains disconnect people from food production

Environmental & land use crisis

Values

Access

Quality

Environment & nature → Food production → Supply chains → Food consumption → Nutrition → Health & wellbeing

Stress

Living environment

Socio-economic & political instability threatens resilience

Disconnection between people and nature

SUSTAINABILITY CRISIS

RESILIENCE CRISIS

HEALTH CRISIS

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Rurbanised food system

Reduce waste & nutritional degradation?

Increase knowledge of production?

Increased access to fresh fruit and vegetables?

Alleviate land use pressure?

Increased national food security?

Ecosystem benefits inside cities?

Stress reduction from access to green space and growing activity?

| Values |
| Access |
| Quality |
| Nutrition |
| Stress |
| Living environment |

Health & wellbeing

Environment & nature → Food production → Supply chains → Food consumption

Supply chain
Food production
Environment & nature

SUSTAINABILITY?   **RESILIENCE?**   **HEALTH?**

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Urban growing and greening is nothing new…

Community growing

Green infrastructure

Urban food for resilience

Vertical farming

DIG FOR VICTORY
On Allotments & Private Gardens

EVERY AVAILABLE PIECE of LAND SHOULD BE PRODUCTIVE

FOR ALLOTMENTS AND ADVICE
Enquire :—
Parks Superintendent, Bolton. 'Phone 383.

'SCUSE THE DIG, BUT— WHAT ABOUT YOUR LAWN?

… but lots of potential for joining up research communities and knowledge to provide more holistic understanding

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Aim

Build an interdisciplinary evidence base and network through collaborative research…

…that helps us understand and perhaps realise the potential that 'rurbanisation' may have for transforming our food system…

…in terms of health, sustainability and resilience.
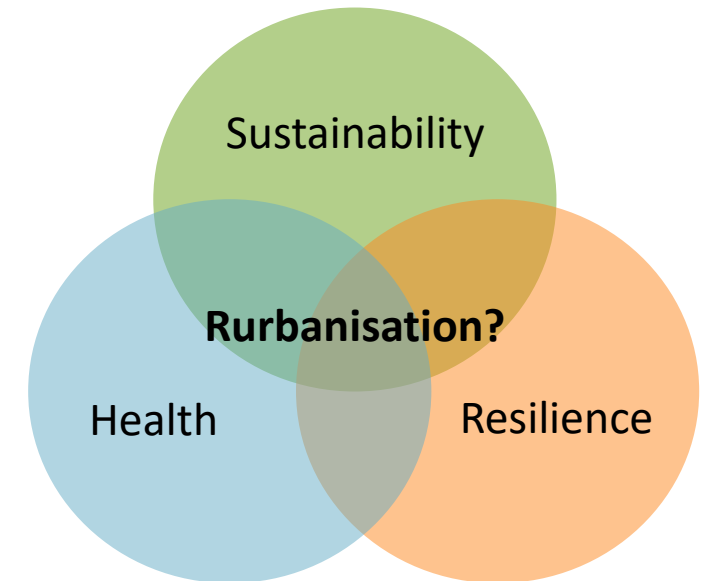
Key questions

1. How would rurbanisation influence:

    a. Healthy and sustainable diets by improving availability, access and consumption of fruit and vegetables?

    b. Food production in terms of quantity, quality and safety and the resilience of the UK food system?

    c. Ecosystem service delivery inside and outside cities?

2. How do we overcome the barriers to rurbanisation and maximise benefits?

*Answered by an interdisciplinary team

Ling Liu: Social and political sciences and supply chains

Jess Davies: Environmental modelling and ecosystem

*Only a two year project – much of what's planned are scoping studies and broad-scale analysis. There will be much left to do: opportunities for spin-off and future collaboration

Bethan Mead: Psychology and appetite

Lael Walsh: Ecology, business, and sustainable agriculture

Natalia Falagan: Food technology, quality and waste

What would rurbanisation mean for health and dietary change?

Dr Charlotte Hardman and Dr Beth Mead, University of Liverpool
charlotte.hardman@liverpool.ac.uk, bmead@liverpool.ac.uk

Context

- Two-thirds of individuals overweight/obese in the UK.

- 8.4 million people are food-insecure.

- Mental health crisis.

- Positive relation between spending time in natural environments and mental health/well-being.

Key Questions

If we were to radically upscale urban growing and greening in cities would that be associated with better wellbeing and healthier dietary choices?

Specific Research Questions:

1. Is proximity to and engagement with urban growing associated with healthy and sustainable dietary choices and what accounts for this relationship?

2. Does exposure to urban agriculture have a causal influence on healthier food choices and what factors mediate this effect (e.g. mood)?

Approach (Research Question 1)

- Cross-sectional survey of consumers (*N*=595).
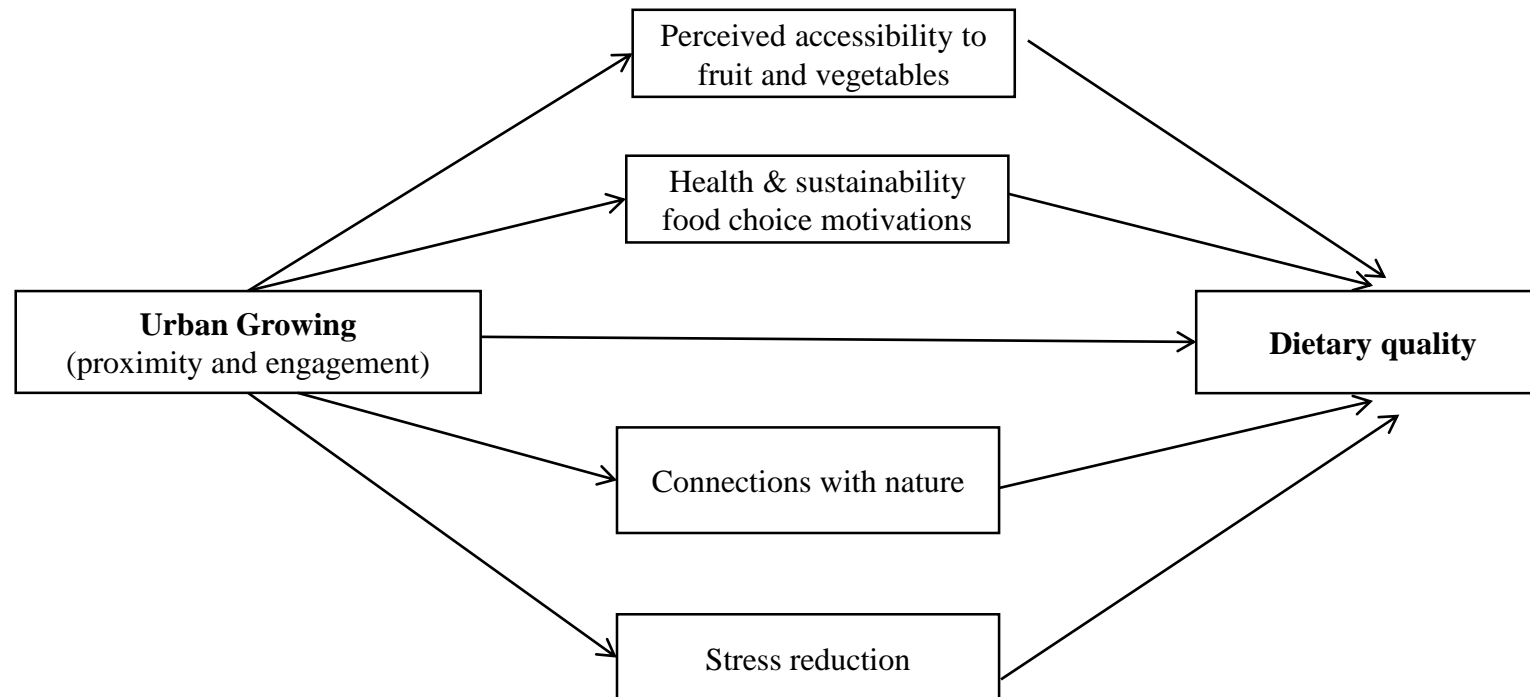
Approach (Research Question 2)

Virtual reality (VR) experiment.

- Adult participants (N=120) randomly allocated to one of three VR conditions: (1.) Urban agriculture environment, (2.) Bland urban environment, (3.) Rural environment.

- Buffet lunch - invited to eat *ad libitum* from a range of fruits & vegetables and high-energy food items.

- Food choice and intake covertly measured.

- Motivation to eat healthily and sustainably, connection with nature, and mood also measured as potential mediators

Outcomes

- Peer-reviewed journal articles.

- Findings of interest/relevance to broad range of stakeholders.
  - Policy.
  - Healthcare.
  - Public.

- Future research: urban agriculture-based interventions for public health.

What would rurbanisation mean for food system resilience & ecosystems?

Lael Walsh, Lancaster University
lael.walsh@lancaster.ac.uk

Context

- Urban agriculture (UA) has been a resilience response to food shortages in the past (e.g. Dig for Victory)

- Global analysis shows adoption of UA could produce ~10% of global fruit & vegetable production

- UK has been highlighted as an area of high potential: 30-300% of UK consumption
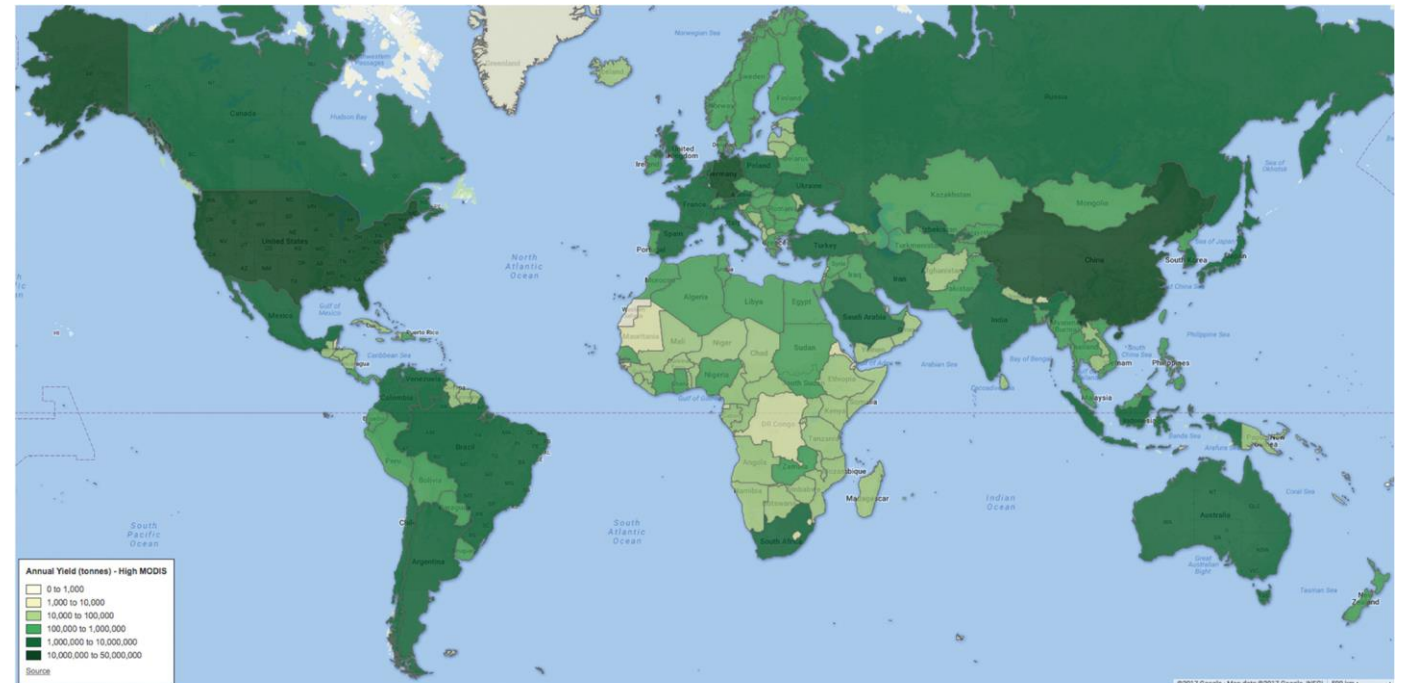

Potential yield (tonnes)

Clinton, N., Stuhlmacher, M., Miles, A., Uludere Aragon, N., Wagner, M., Georgescu, M., Herwig, C. and Gong, P., 2018. A global geospatial ecosystem services estimate of urban agriculture. *Earth's Future*, *6*(1), pp.40-60.

Key questions

What would rurbanisation mean for food system resilience and ecosystem services?

UK wide analysis of potential for urban food production & resilience

Ecosystem service analysis for rurbanisation
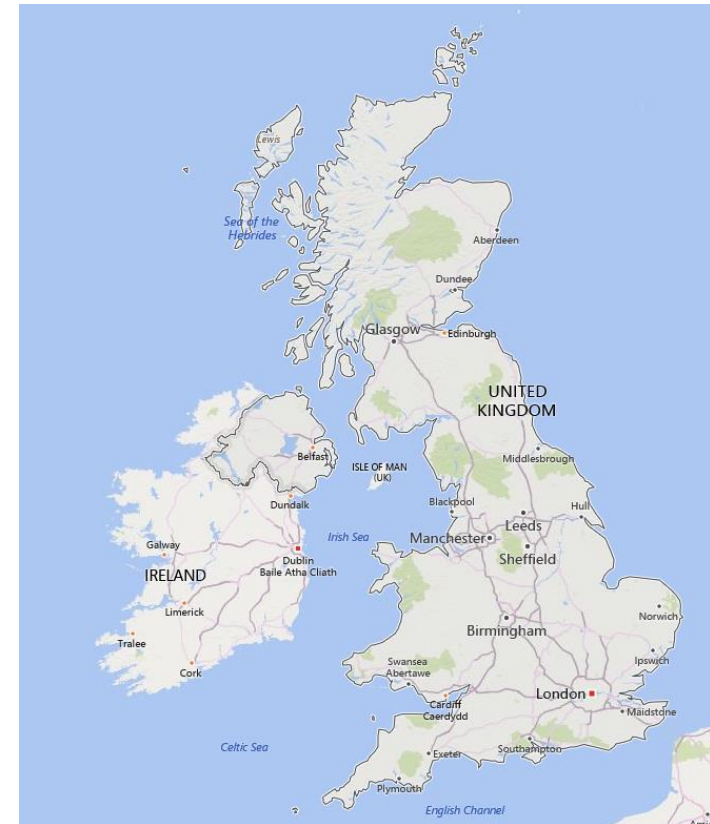
UK wide analysis of potential for urban food production & resilience

Key questions & proposed approaches:

1. What is the rurbanisation potential?
- Physical/agronomic/climate
- Socio-economic-political

2. What could be grown where and how much?
- Existing studies and estimates of UA potential (existing datasets)
- Setting out a methodology for a UK based analysis (where, what, how)

3. How do we build food system resilience?
- Evaluating the value of potential UA production in terms of trade and consumption
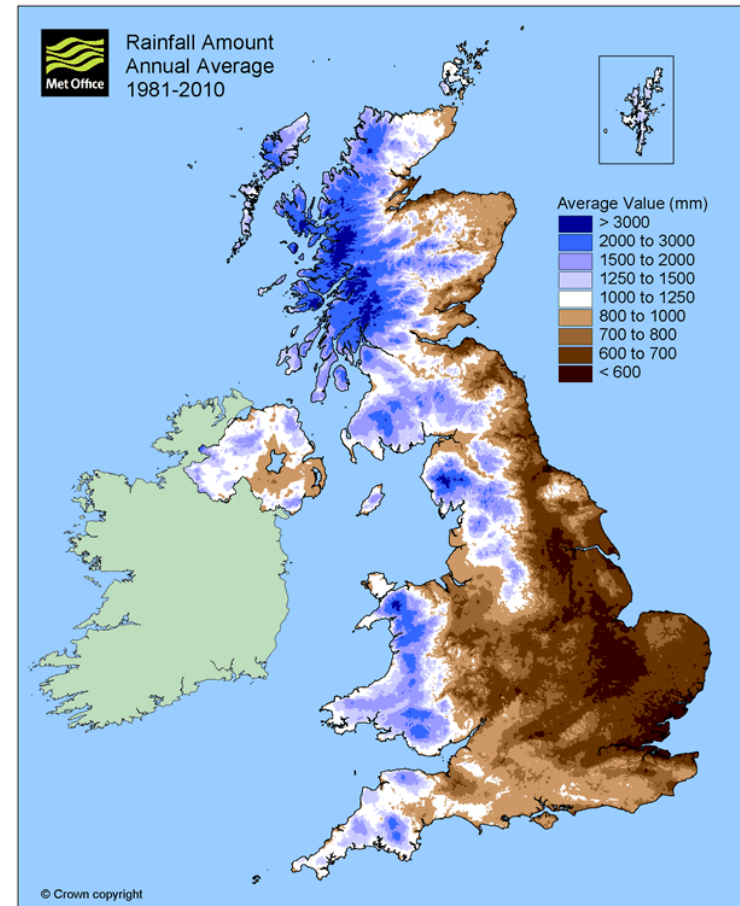
How would rurbanisation influence ecosystem service delivery in urban areas?

Key questions & proposed approaches:

4. How are ecosystem services affected?

- Desk-based scoping study –existing data, literature and modelling
    - Crop production
    - Carbon sequestration
    - Water regulation
    - Pollination
    - Other services? Recreation/cultural/aesthetic
- Rurbanisation scenarios in case study regions
    - Consultations

5. What are the benefits or disbenefits?

- Trade offs
- Different models e.g. low/high tech, community/corporate
- Secondary issues

Outcomes

- Contribution to new knowledge by publishing peer reviewed papers

- First UK-wide estimate of UA potential of potential relevance in decision-making and policy interventions

- Foundation on which to build future research on rurbanisation and ecosystem service delivery and UA contribution to food system resilience

What would rurbanisation mean for food quality and safety?

Dr Sofia Kourmpetli & Dr Natalia Falagán, Cranfield University
s.kourmpetli@cranfield.ac.uk, Natalia.Falagan@cranfield.ac.uk

Main research question

Nutritional Quality?

Safety?

Urban grown fresh produce	vs	Conventional and/or imported

Why do we expect to see differences?

- Contrasting growing conditions and practices

- Different supply chains

- Air and soil contamination in urban environments

- Use of agrochemicals

- **Freshness at point of consumption**

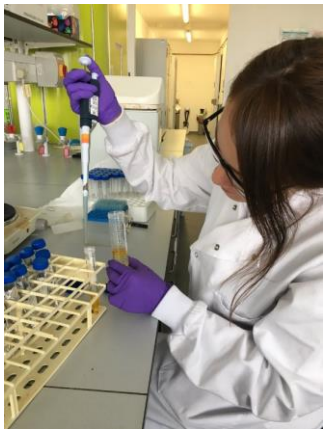- **Nutritional quality**

- **Safety**

Evaluation strategy

Selection of 2 scoping regions
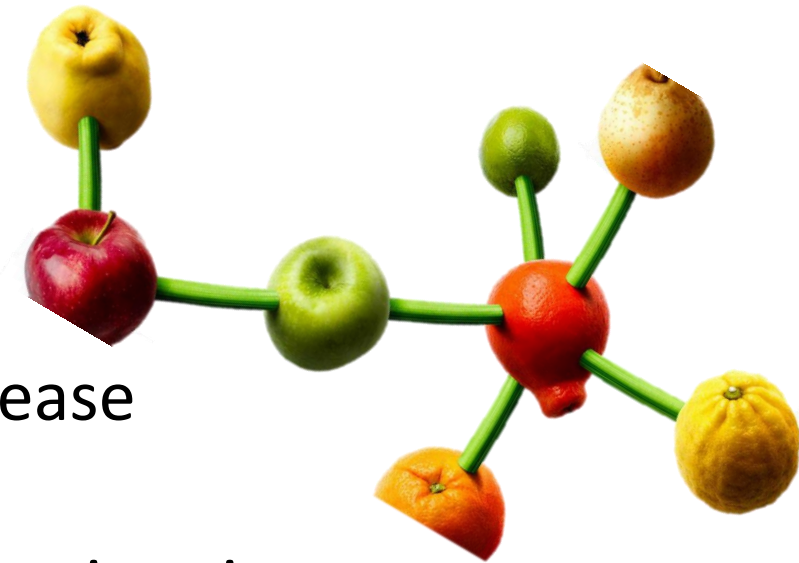
Collection of plant and soil samples

How do they compare?

What we'll be testing for?

- Physiological properties (e.g. colour, firmness, disease incidence/severity)

- Nutritional content and bioactive compounds (e.g. vitamins, phenolics, flavonoids, anthocyanins etc.)

- Contaminants (e.g. heavy metals, POPs, pesticide residues)

- Soil quality (e.g. organic matter, heavy metals)

- Effect of supply chain length on quality

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Outcomes

- <u>Region-specific</u> evidence base regarding the nutritional quality and safety of urban agriculture ⟶ Identify problems and develop transformational solutions

- Contribution to knowledge through peer-review publications
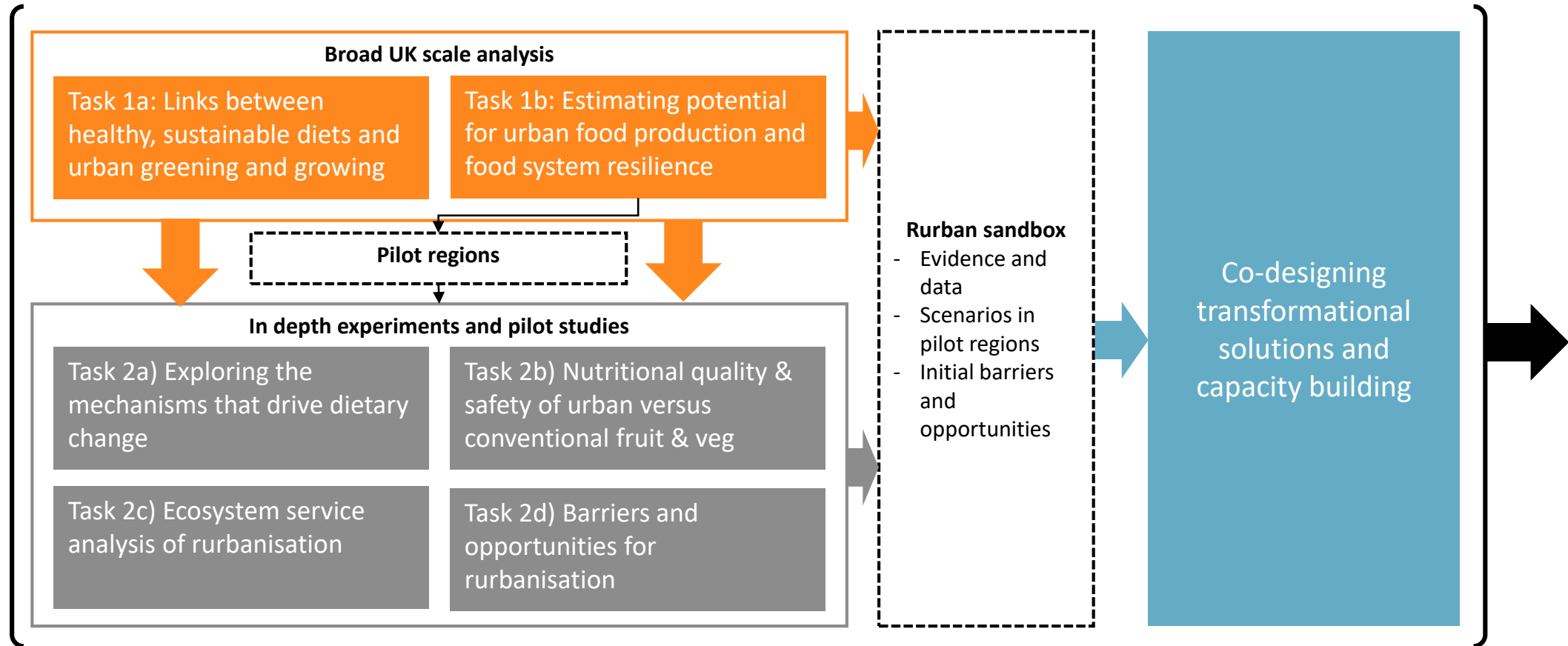
- Consumer confidence on urban grown food?

Barriers and opportunities for rurbanisation and developing a roadmap

Ling Liu, Lancaster University

Approach

Broad UK scale analysis

Task 1a: Links between healthy, sustainable diets and urban greening and growing

Task 1b: Estimating potential for urban food production and food system resilience

Pilot regions

In depth experiments and pilot studies

Task 2a) Exploring the mechanisms that drive dietary change

Task 2b) Nutritional quality & safety of urban versus conventional fruit & veg

Task 2c) Ecosystem service analysis of rurbanisation

Task 2d) Barriers and opportunities for rurbanisation

Rurban sandbox
- Evidence and data
- Scenarios in pilot regions
- Initial barriers and opportunities

Co-designing transformational solutions and capacity building

Rurban Revolution Kick-Off Meeting: Can ruralising urban areas through greening and growing create a healthy, sustainable & resilient food system?
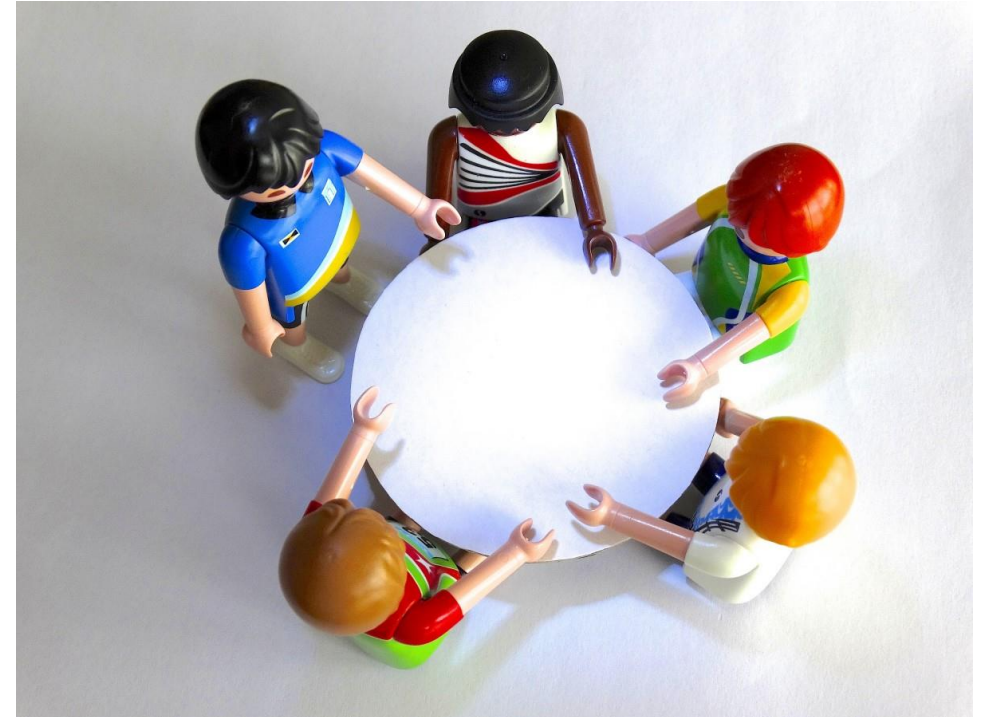
Agenda

12:30   Arrive and lunch - please help yourself to lunch and take a seat

12:45   Welcome, overview and introductions

13:00   Overview of the Global Food Security - Resilience of the UK Food System in a Global Context Programme, Roger Sykes, Oxford University

13:10   Introduction to Rurban Revolution project

13:40   Table discussions & feedback

14:45   Wrap up

Topics

- **Mapping relevant research** – how does this relate to your current research (synergies) and who is doing interested related research elsewhere?

- **Fact-finding** – what useful datasets and interesting examples of rurbanisation in action in the UK and elsewhere exist?

- **Potential potholes and destinations** – what difficulties might we encounter, and how can we maximise outputs?

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Opportunities for future collaboration

Thank you

Staying in touch

jess.davies@lancaster.ac.uk or any of the team
www.lancaster.ac.uk/lec/rurbanrevolution
@RurbanRev

How would you like to engage with the project? (please add your name)