SiEUGreen
Sino-European innovative green and smart cities

Linking SiEUGreen Technologies to New Market Entry Points

Johannes Heeb and Martin Wafler, SEECON

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SiEUGreen Final Conference, Ski (Norway), 17 November 2022

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Global population milestones

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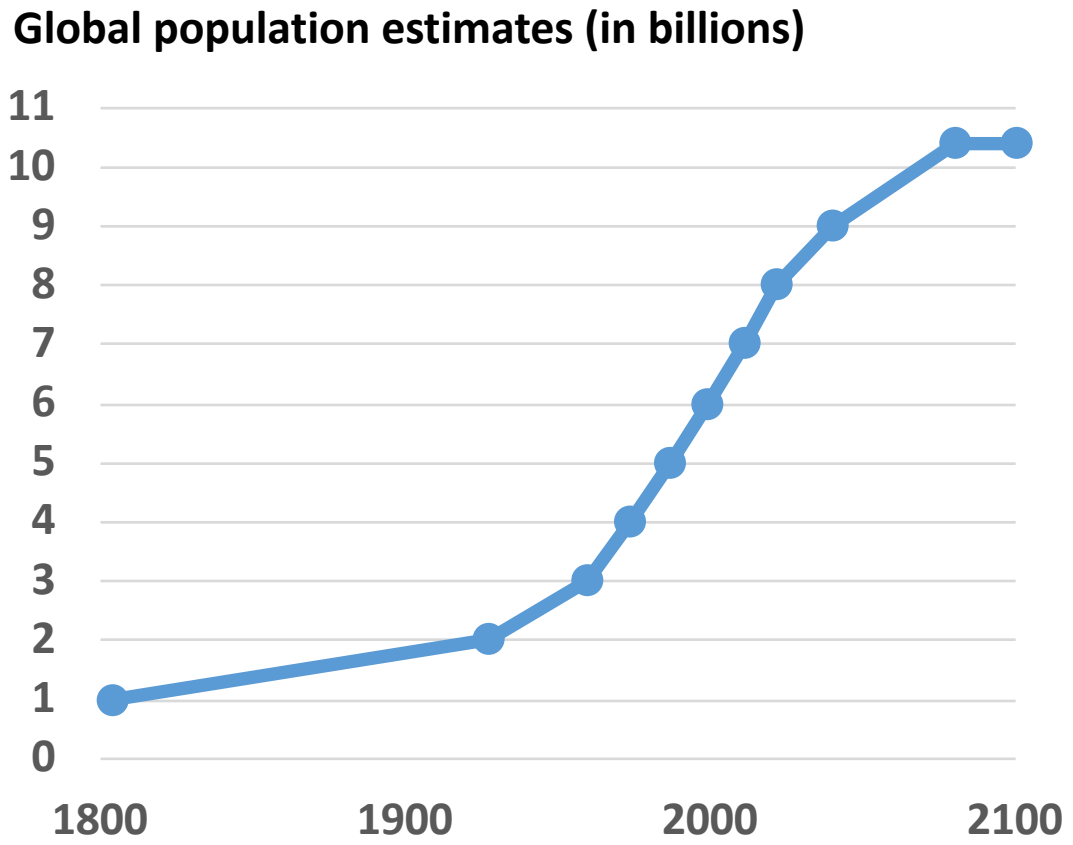

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Population & food demand

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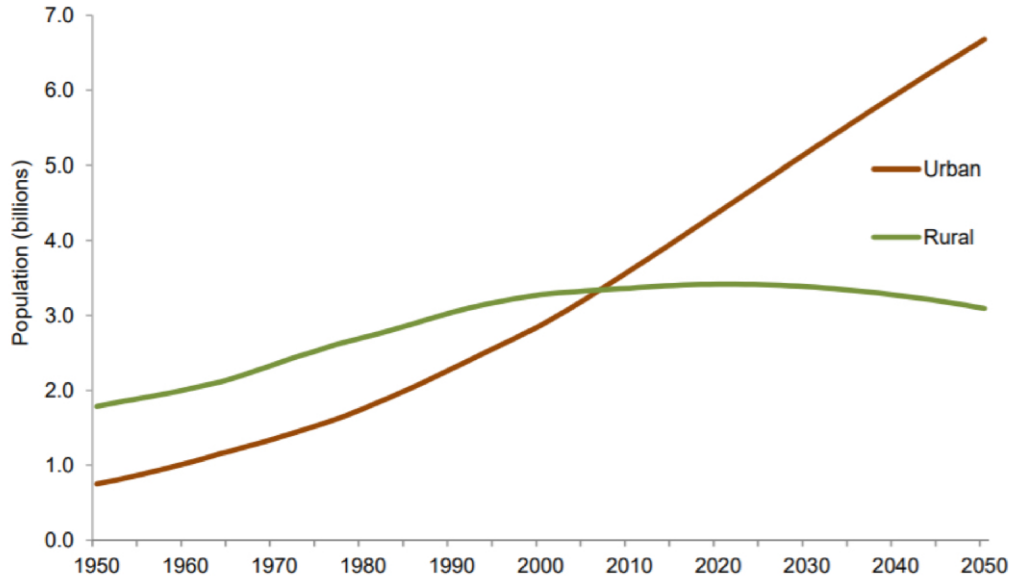
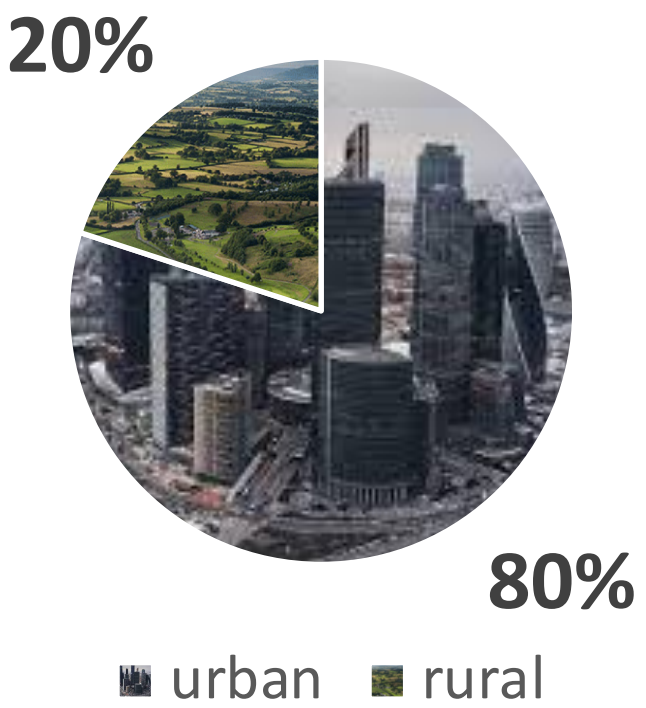


Data source: United Nations, Department of Economic and Social Affairs, Population Division (2018a). *World Urbanization Prospects 2018.*

Source: https://www.publichealthnotes.com/wp-content/uploads/2019/10/Urban-and-rural-population-of-the-world-1950-2050.png

Distribution of food consumption by 2050



Source: https://www.reutersevents.com/sustainability/cities-should-be-heart-revolution-how-we-produce-food

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Food-miles emissions

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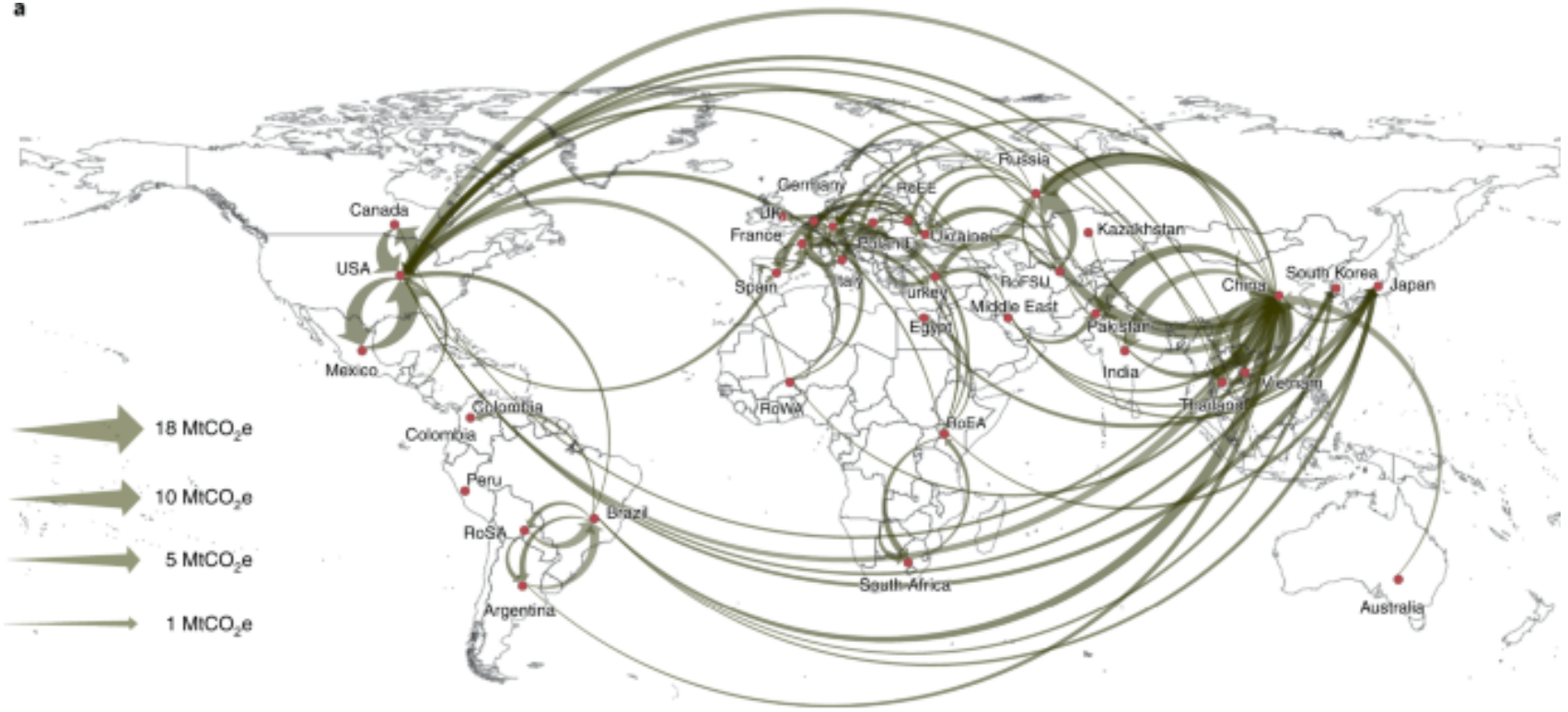
Top 100 bilateral flows of international food-miles emissions



Source: MENGYU ET AL., 2022

2.400 km

average travel distance of agricultural produce in USA

3.0 $GtCO_2e$

global food-miles emissions

36%

associated with vegetable and fruit consumption

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Global urban farming market

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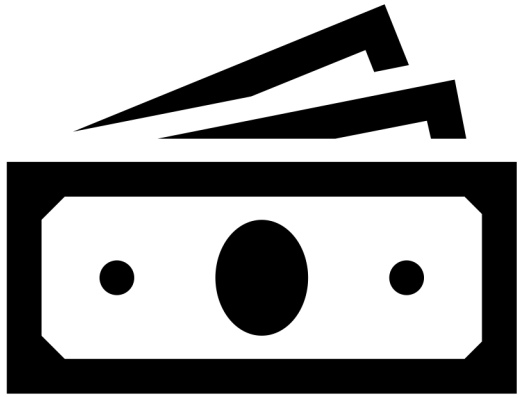
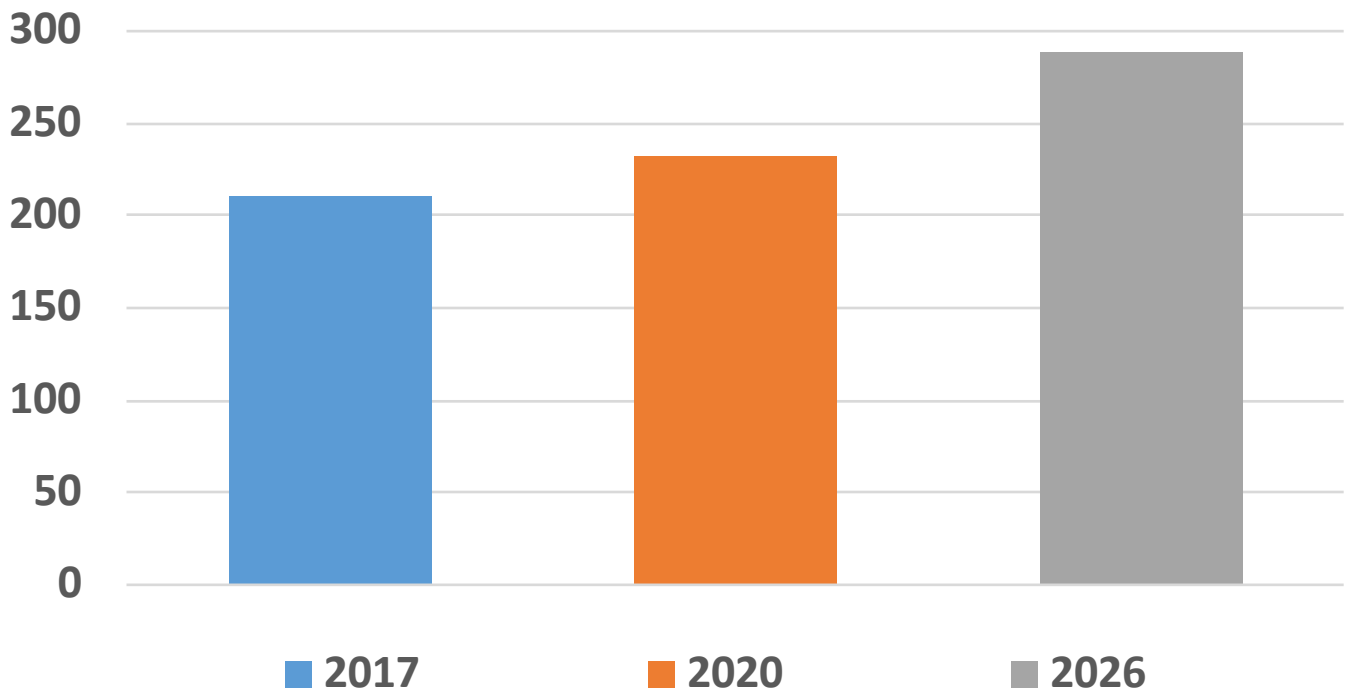
Global urban farming market (in USD billions)





Source: Research and Markets, 2019

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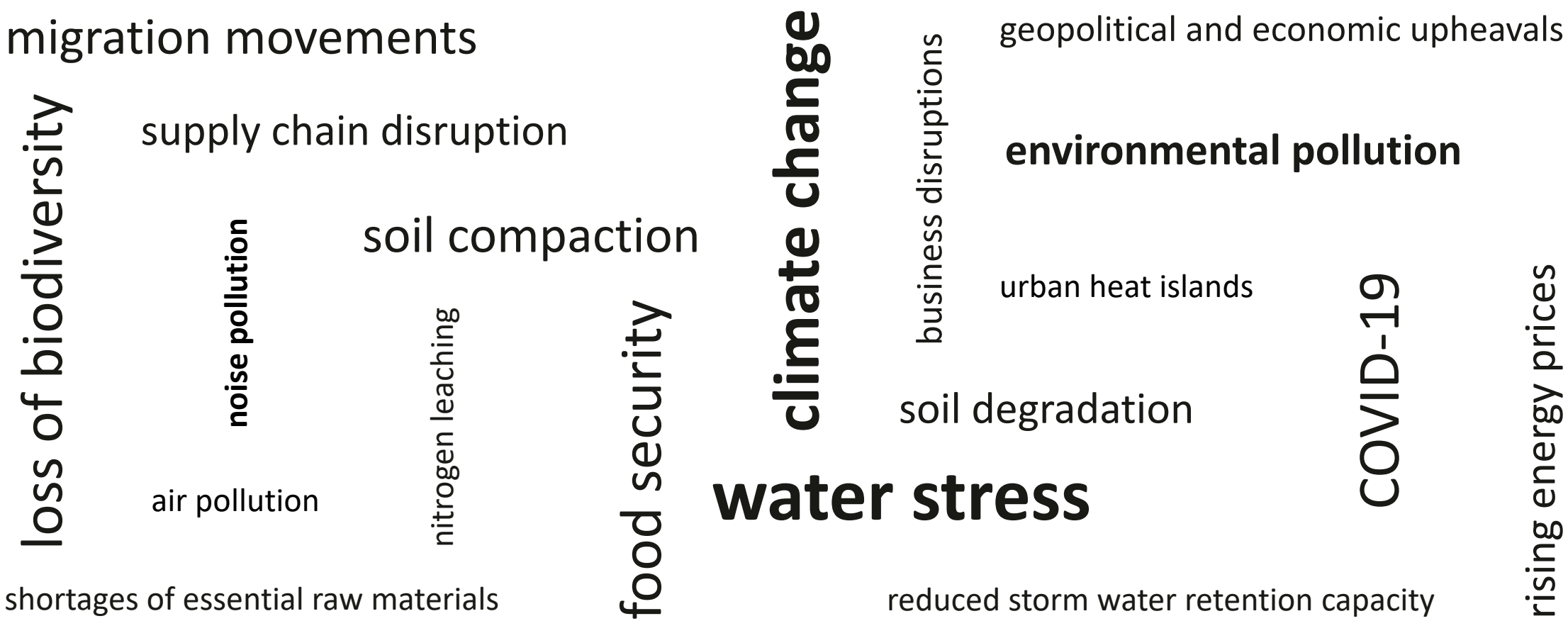
Turbulent times



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Market entry points

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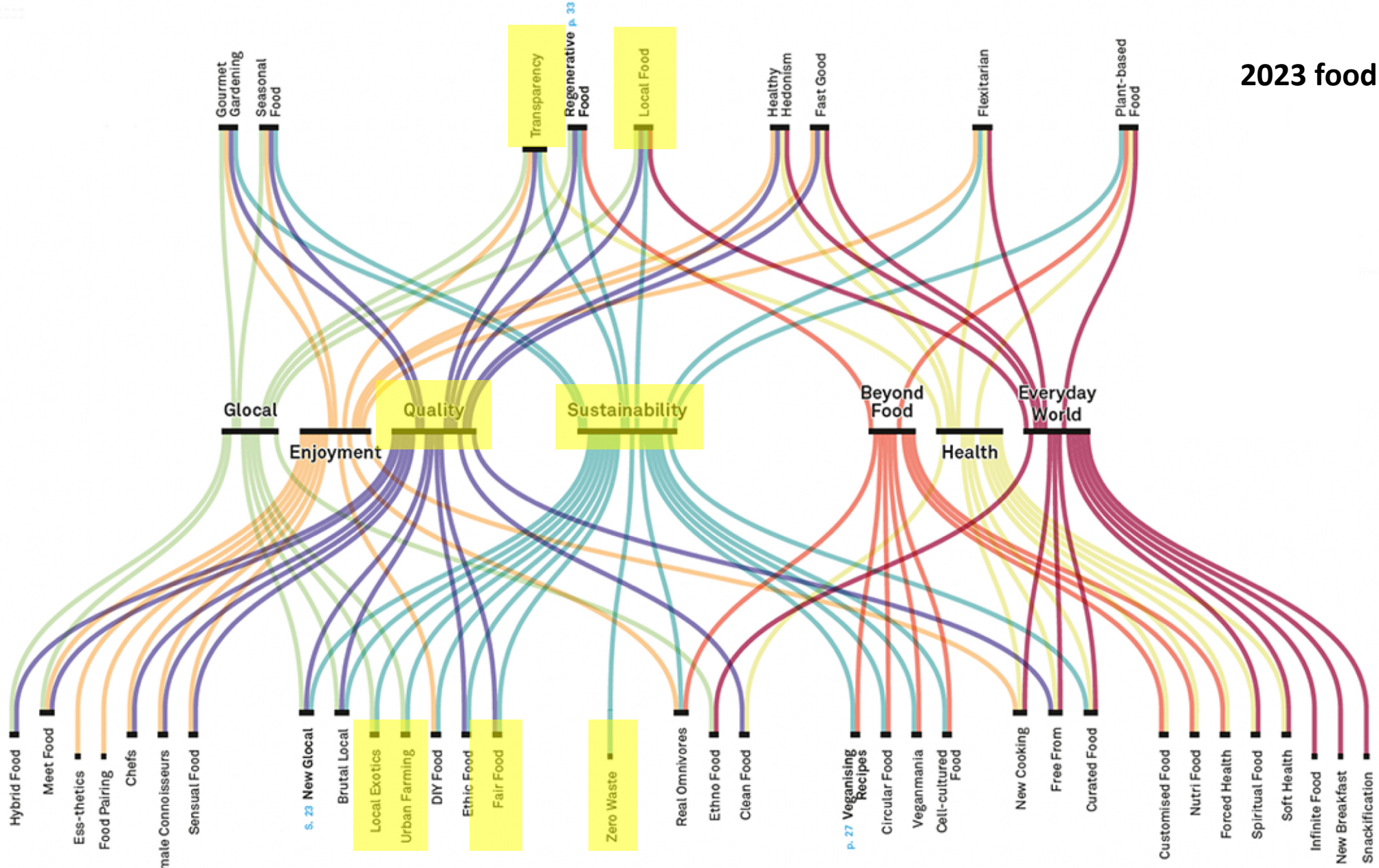
2023 food trend map



struvite

vacuum toilets

green walls

paper-based cultivation

insects from organic waste

polytunnel

on-site wastewater treatment

Commurban App

green roofs

co-composting

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vermicomposting

green houses

wetland/pond systems

aquaponics

composting toilet

borehole thermal energy storage

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Green houses

Uploaded by: Siddhartha Pandey

- **prolonging growing season**
- increased food security
- **localised food production**
- higher quality food
- **regionally grown exotic plants “local exotics”**
- multi-purpose facilities
- education
- employment generation

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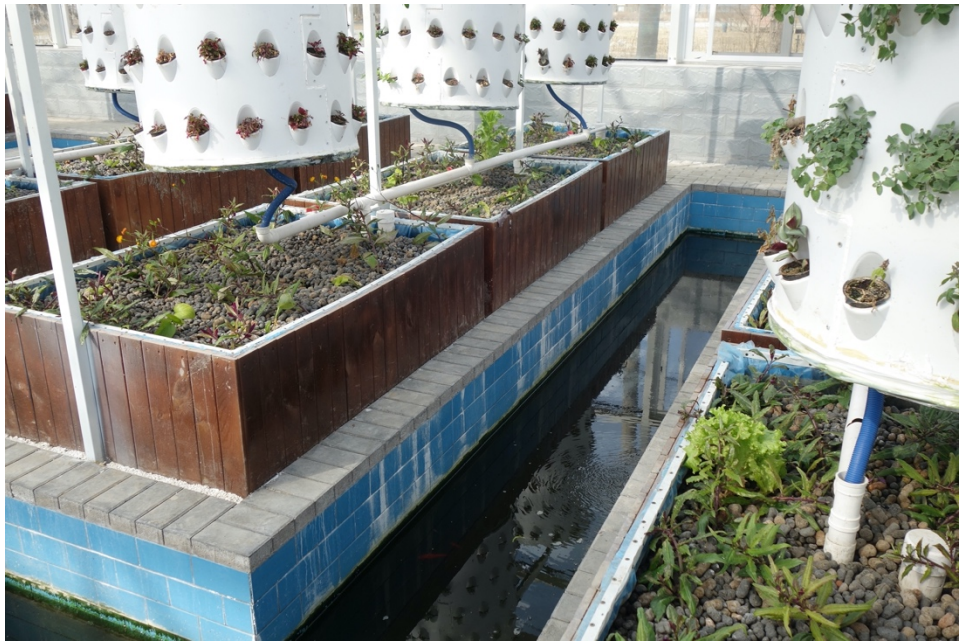
Aquaponics



Uploaded by: Shinan Wang

- strengthened supply chain resilience
- increased food security
- **localised food production**
- higher quality food
- **nutrient recycling**
- regionally grown exotic plants “local exotics”
- **zero-waste approach**

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Struvite

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- preventing soil degradation
- zero-waste approach
- reduced environmental pollution
- increased food security

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Insects from organic waste

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Uploaded by: Siddhartha Pandey

- strengthened supply chain resilience
- **zero-waste approach**
- **preventing soil degradation**
- **reduced environmental pollution**
- increased water holding capacity
- higher quality food

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Green roofs

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https://www.urbanscape-architecture.com/

- reduction of Urban Heat Island (UHI) effect
- **reduction of stormwater runoff**
- absorption of CO_2 from the air
- increase in urban biodiversity and restore of ecological cycle
- reduced maintenance and renovation costs
- reduce energy consumption for heating and cooling
- increased sound insulation
- **usable green space**
- **opportunities for urban agriculture**
- ensure self-reliance on food resources

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Paper-based cultivation

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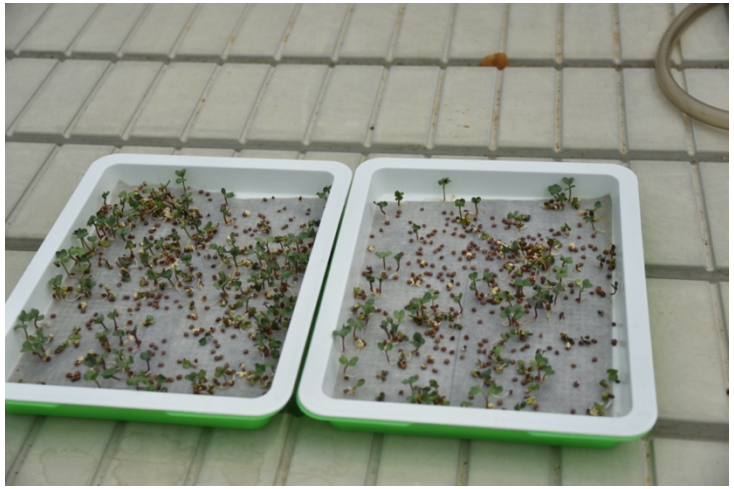

- improved food security
- **local supply**
- strengthened supply chain resilience
- **resource efficiency**
- **innovation**

Uploaded by: Siddhartha Pandey

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Polytunnel

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- **prolonging growing season**
- improved food security
- **local supply**
- strengthened supply chain resilience
- **community engagement**

https://www.bigblogofgardening.com/wp-content/uploads/2021/11/polytunnel-1653x1094-1.jpg

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