

Scaling to holistic local food security: directions in agrifood system sustainability assessment

Steven R. McGreevy
Research Institute for Humanity and Nature
Kyoto, Japan



FEAST
Enough is as good as a feast

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Environment:
Japan, Asia and Beyond
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FEAST

participatory action research approach

realities and potential for bottom-up sustainable agrifood transition

at sites in Asia

patterns of food consumption & production

food / ag related social practices and their socio-cultural meanings

food system mapping & assessment

partner with stakeholders to vision plausible futures

initiate experiments and actions

food policy councils, smartphone app, games

Agrifood system assessment

- How do we measure progress toward a “more sustainable” agrifood system?
- Look at how assessments have been changing, future directions
- FEAST assessments

Foodshed assessment

Community Food Assessment Report

From Our Own Soil A Community Food Assessment Benton County, Oregon, and Its Foodshed 2006



Ecumenical Ministries of Oregon
In cooperation with Oregon State University & the Rural Studies Initiative

Think Globally ~ Eat Locally SAN FRANCISCO FOODSHED ASSESSMENT



EDWARD THOMPSON, JR.
California Director & Senior Associate
American Farmland Trust

ALETHEA MARIE HARPER
Ag Parks & Food Systems Project Manager
Sustainable Agriculture Education (SAGE)

SIBELLA KRAUS
President, Sustainable Agriculture Education (SAGE)
Director, Agriculture in Metropolitan Regions Program
University of California, Berkeley

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Can Totnes and District Feed Itself?
Exploring the practicalities of food localisation.
Working Paper Version 1.0.
Rob Hopkins, Mark Thurstain-Goodwin and Simon Fairlie.



This paper has been produced by Transition Town Totnes (www.totnes.transitionnetwork.org) and Transition Network (www.transitionnetwork.org), with funding from Landshare (www.landshare.org), research and GIS input from Geofutures (www.geofutures.com) and advice from Simon Fairlie and Martin Crawford.

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1. Introduction

Interest in local food has grown steadily in recent years, with people seeing not just its nutritional and taste benefits, but also its political role, alongside its ability to strengthen local economies. Increasingly, movements such as the Transition Network¹ are seeing, in the light of climate change and resource depletion, that the role of local food is no longer an optional extra, but a key necessity in a resource-constrained future. In the wider context of economic localisation, economist David Fleming writes, "...localisation stands, at best, at the limits of practical possibility, but it has the decisive argument in its favour that there will be no alternative" (Fleming 2006). This paper explores the degree of localisation in the food sector that might be possible, through an drawing together of the concepts of 'foodzones' and 'foodsheds', as well as Simon Fairlie's work on 'Can Britain Feed Itself?' It utilises GIS (Geographical Information Science) technology and a range of datasets to look at Totnes and District in Devon, England, to assess the degree to which the area could achieve a significant degree of self reliance for food and other essentials. Totnes and District is chosen for this paper as it is home to Transition Town Totnes, the first such project in the UK, and this paper is part of a larger project into food localisation that they are undertaking.

The research and findings presented here are very much work-in-progress, and raise many areas for further research. Many of the key datasets that a thorough version of this work would need are not in the public domain and are prohibitively expensive to access, some of the data around land use is out of date, and many of the statistics have to be inferred from an overlapping of several sets. However, in spite of its limitations and imperfections, the findings of this paper are fascinating, with far-reaching implications for other settlements and for the UK as a whole. The conclusions identify the need for a rethink of how agriculture is practiced, as well as the urgent need for research into new models of food production. Also identified is the need for national version of this research, a larger project, but in the light of the fast moving issues of peak oil, climate change and the economic difficulties facing the UK, a profoundly urgent one.

¹ www.transitionnetwork.org

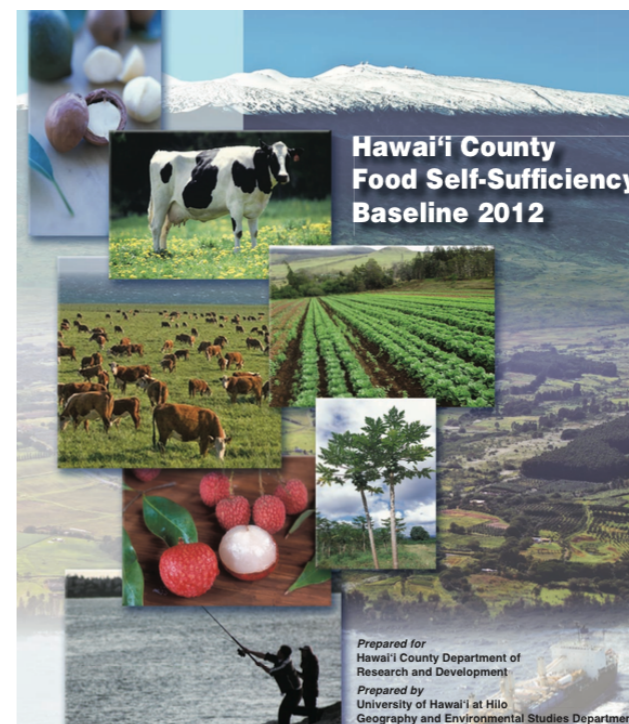
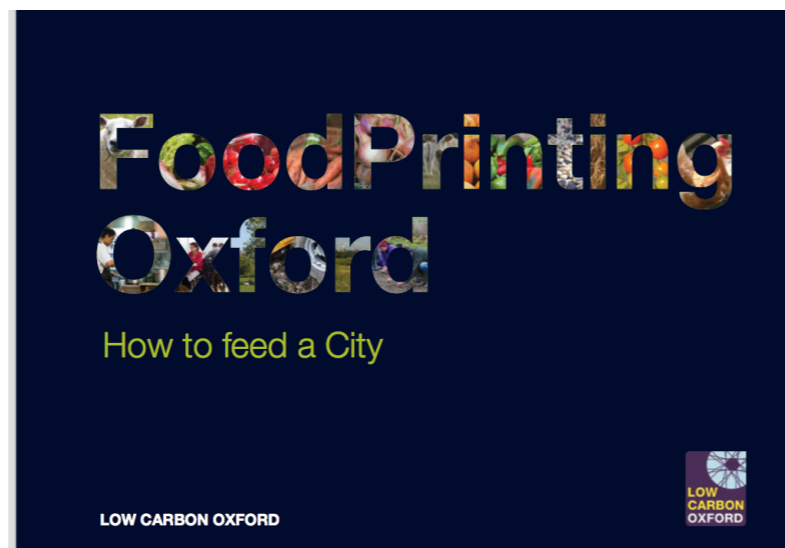
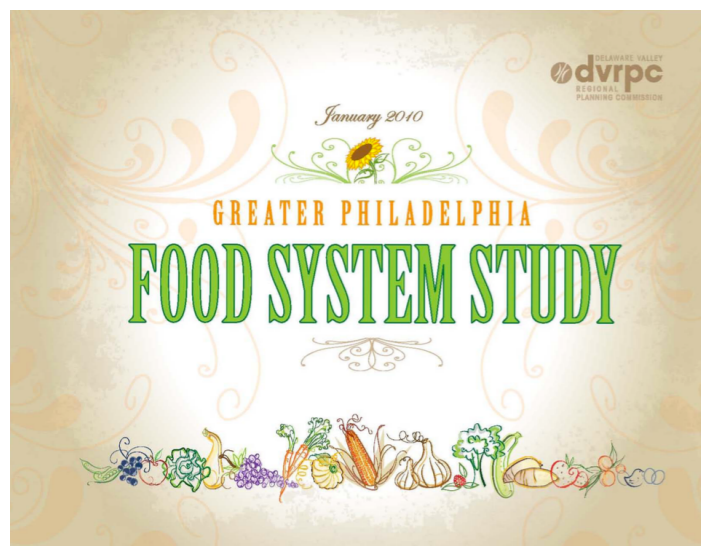
Totnes

CENTRAL TEXAS FOODSHED ASSESSMENT

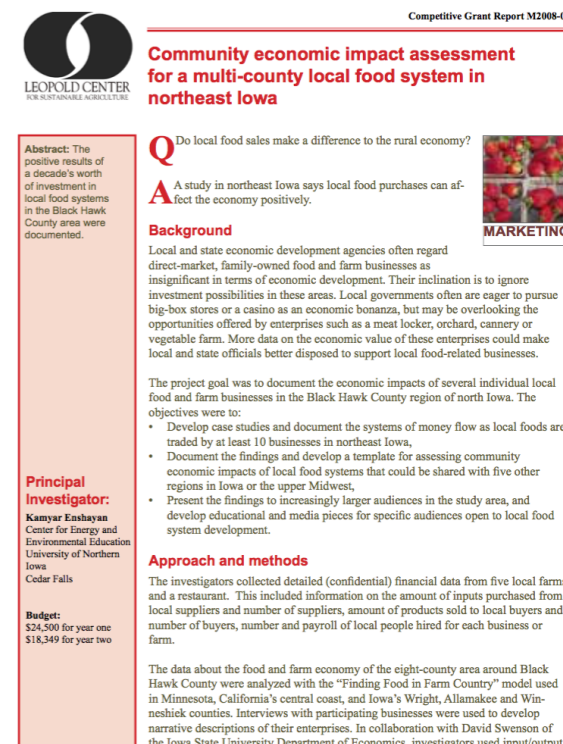
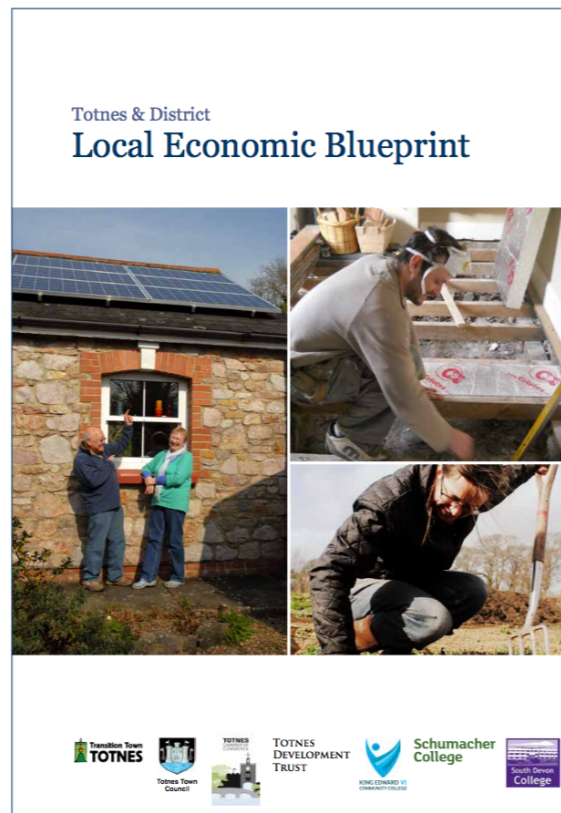
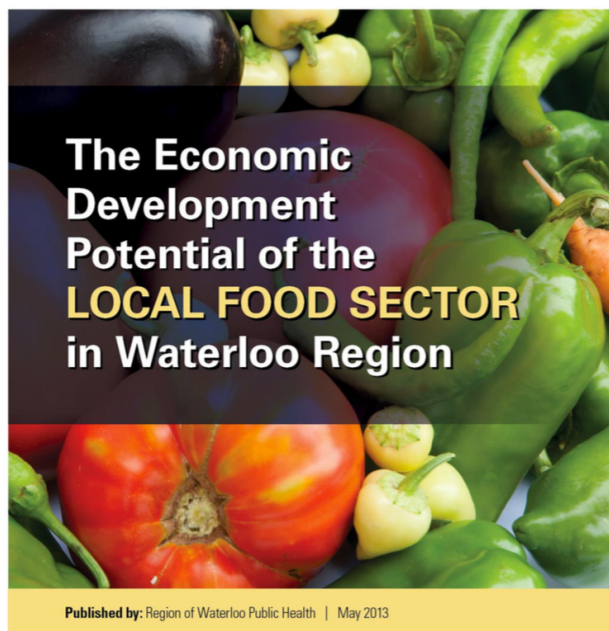


A report by Karen Banks for Sustainable Food Center

All-inclusive Food System Analysis



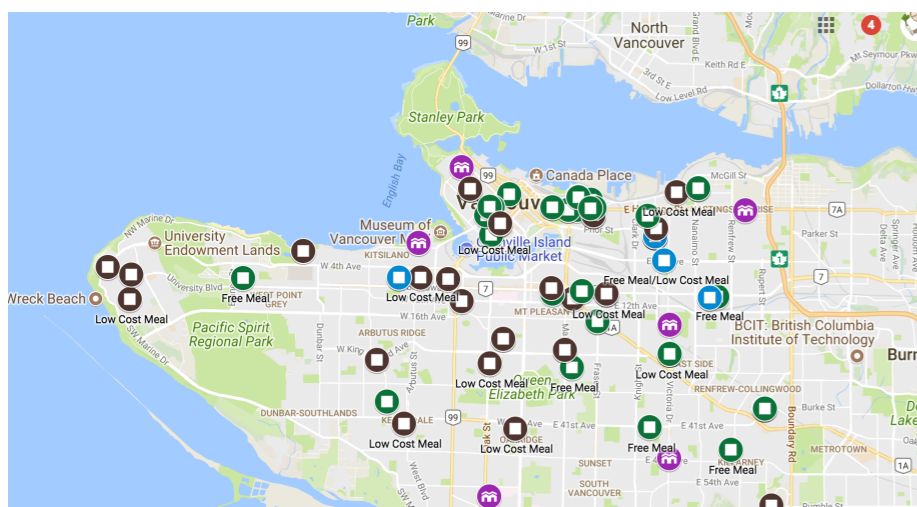
Local food economy analysis



MSU

ISU

Community food asset mapping Community food security assessment



Vancouver



20
DECEMBER
12



From assessment to planning



Assessing the San Diego County Food System: Indicators for a More Food Secure Future

December 2010



UC DAVIS
AGRICULTURAL SUSTAINABILITY INSTITUTE
College of Agricultural and Environmental Sciences



CALGARY EATS!

A Food System Assessment and Action Plan for Calgary



Food Connections: Toward a Healthy and Sustainable Food System for Toronto

A Consultation Report

February 2010



Community toolkits

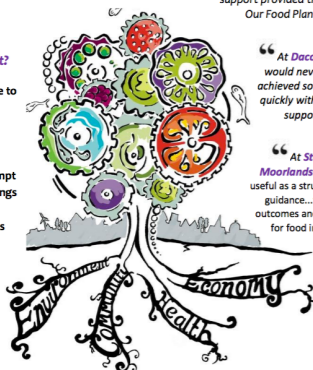
Our FOOD Plan

A toolkit for creating a food vision and action plan for your community

Piloted in three locations, this toolkit offers a practical set of tools and process guides for partnerships at any stage of food strategy development.

What's *in* the toolkit?

- a step by step guide to the process
- website and social media tools
- survey templates
- event guides and prompt cards for public meetings
- interactive forms
- reporting templates



"Here in Leicester we have seen our work on healthy, sustainable food flourish over the past year thanks to the support provided through Our Food Plan."

"At Dacorum...we would never have achieved so much so quickly without f3's support."

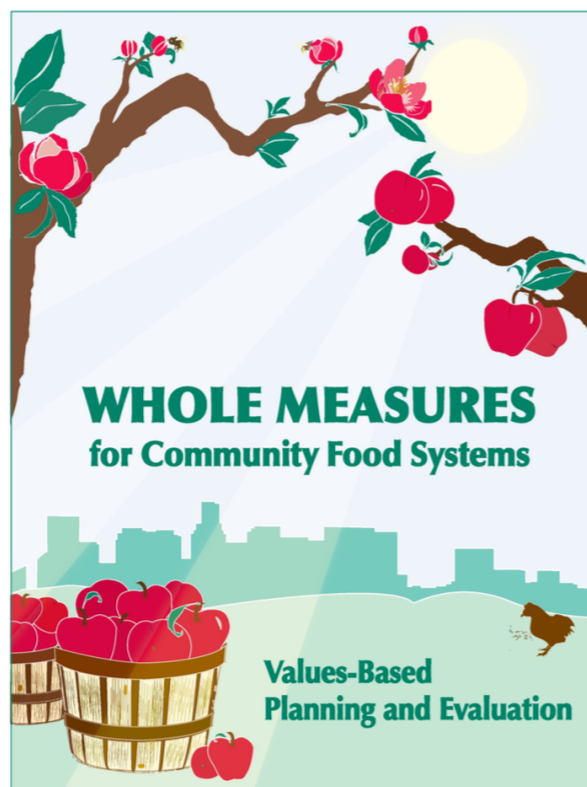
"At Staffordshire Moorlands...we found it useful as a structure that gives guidance...with positive outcomes and development for food in the area."

How can YOU use the toolkit?

We can send you all the basic tools to use freely. Please contact us first though, so we can discuss your needs and how to support you further.



An initiative developed by f3 the local food consultants, with funding from Big Lottery 'Local Food'



What's Cooking in Your Food System?

A GUIDE TO COMMUNITY FOOD ASSESSMENT

WRITTEN BY KAMI POTHUKUCHI, HUGH JOSEPH, HANNAH BURTON, AND ANDY FISHER

EDITED BY KAI SIEDENBURG AND KAMI POTHUKUCHI

2002

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(310) 822-5410
cfs@foodsecurity.org
www.foodsecurity.org

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FACILITATOR'S GUIDEBOOK - 2011



A guide to working with your community

Virginia Cooperative Extension



Approach/process

→ Toward more *inclusive, transdisciplinary*

Scope

→ Broadening to include
issues of social, economic, justice, wellbeing

→ Narrowing toward
absolute sustainability assessment

Food system assessment approaches

Approach	Indicators	Stakeholders	Outputs/Outcomes	Benefits/ Draw-backs
Top-down (Consultancies)	Provided by experts, May not be context specific	Limited involvement	Report (may not be public) Impact in community or w/ food system actors may be limited	Fast Comparisons easier Ownership lacking May lack clear plan for enactment
Bottom-up (Community-based assessments)	Generated by SH Context specific, but data collection can be an issue	High involvement Tends toward selective participation	Reports open to public Impact on “mainstream” food actors may be limited	Ownership by group Comparisons difficult Takes dedicated group to commit (stress) Funding
Transdisciplinary	Sets provided by experts and debated, modified amongst SH “Co-creation”	“Safe space” Tends to be a better representation from relevant sectors Decision makers involved	Open outputs Facilitated interaction can lead to more impacts (policies, plans, implementation)	“Co-produced”, Ownership high Takes time! Establish trust

No guarantees for success

”champions”, translating between groups, funding etc.

Site-based civic food network action research

-Focus groups
-Survey on Consumption habits

City Food System assessment
-Food flow & Production
-Potential foodshed

Visioning Workshops
For public
For networking / FPC

Report
+Economic analysis
+Future scenarios


Food policy council &
Network

Backcasting/Planning
Workshops

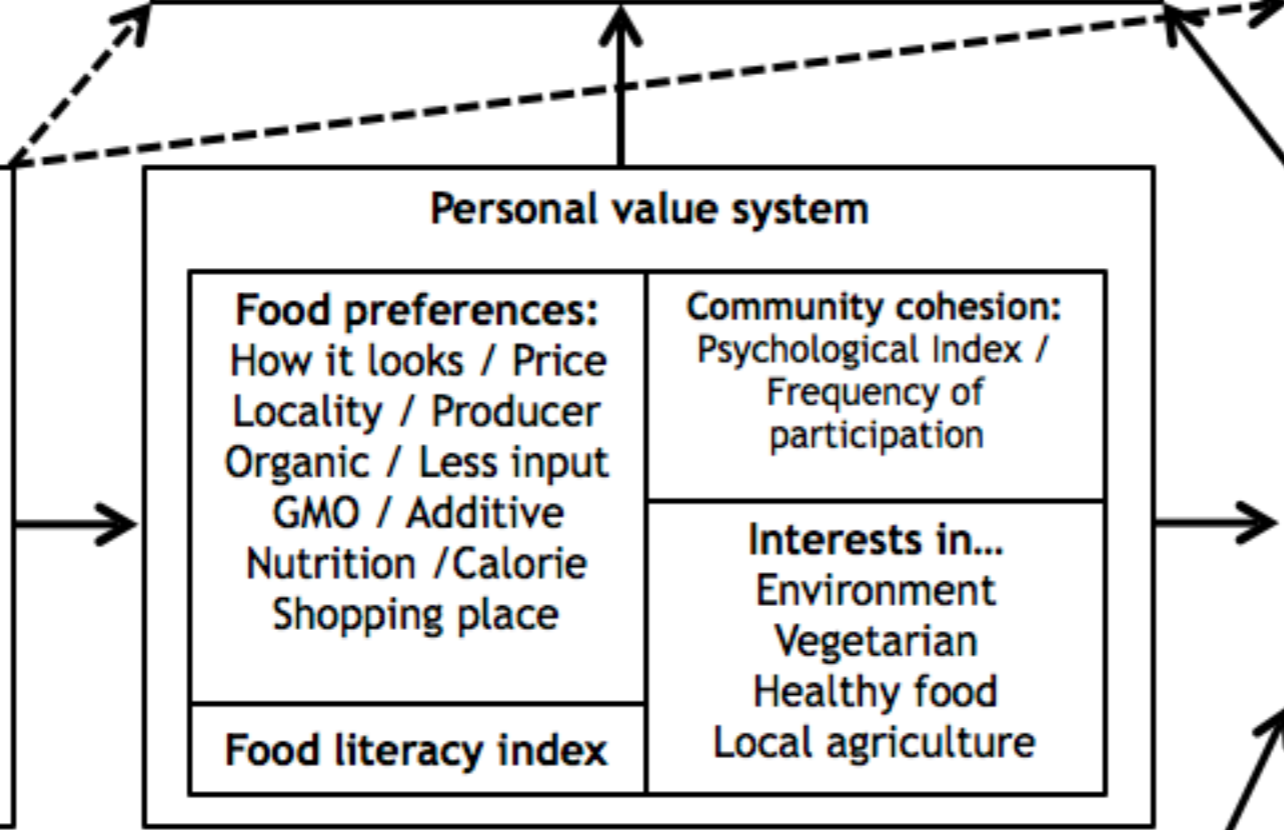
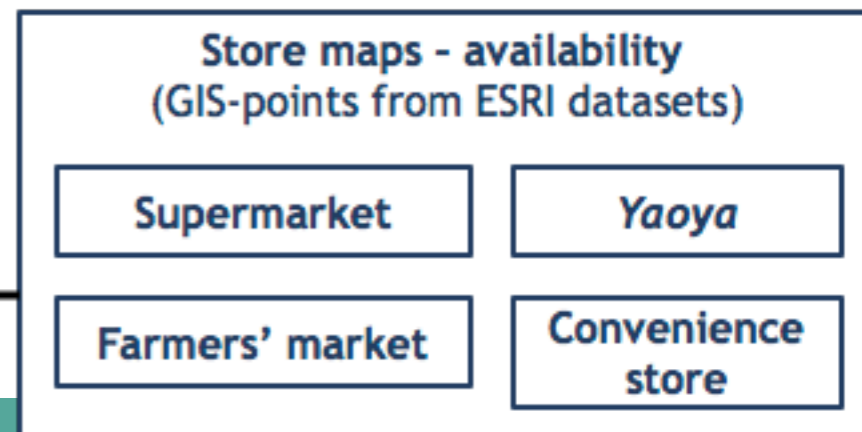
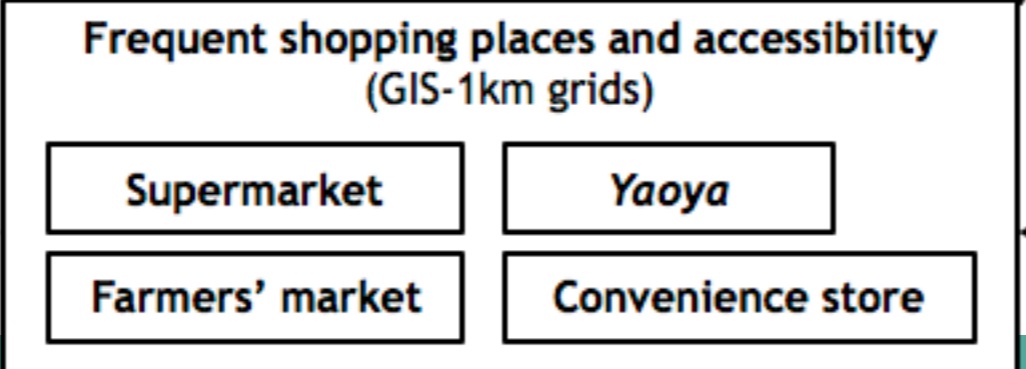
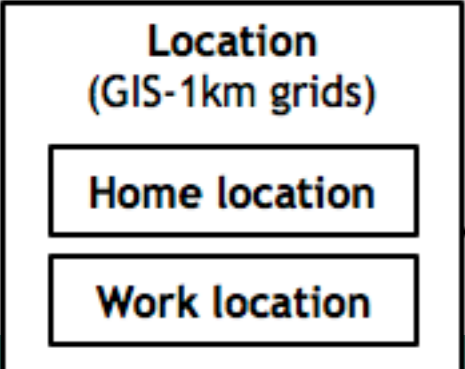
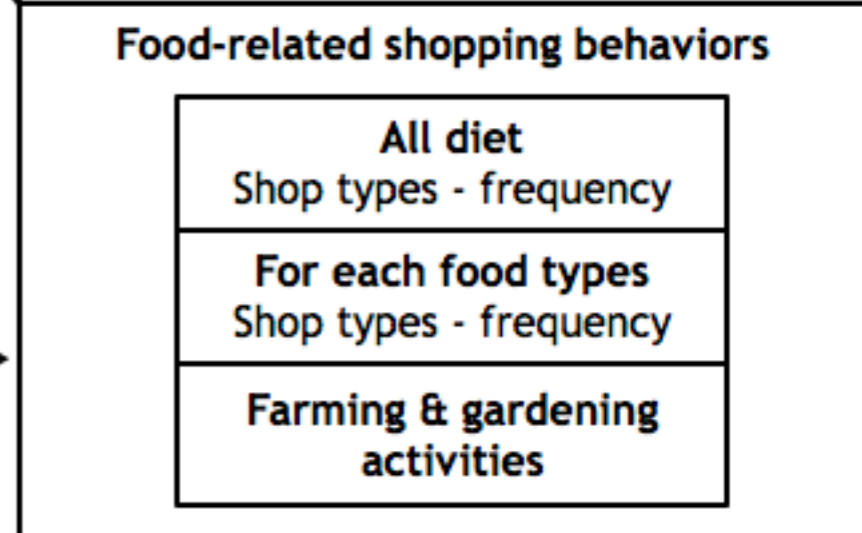
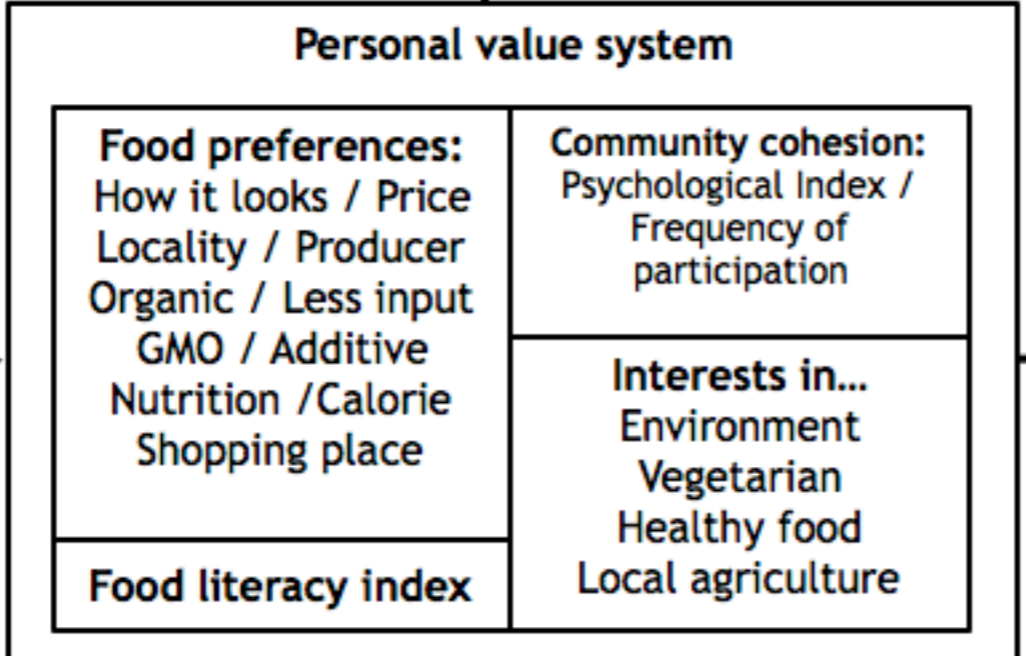
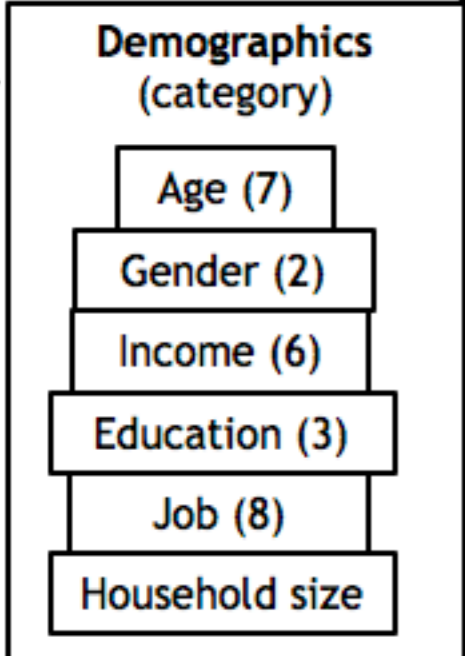
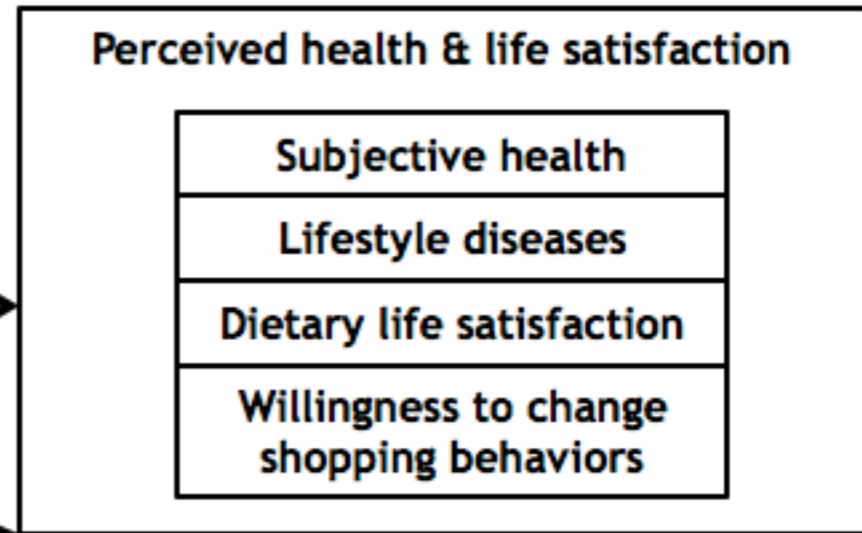
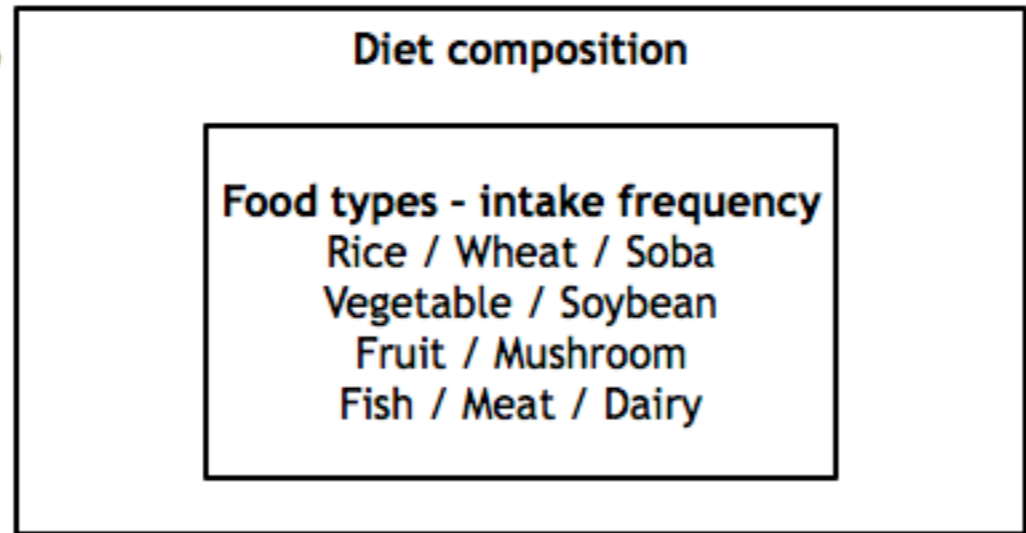
Intervention Policy/
Plan
Transition framework

informs

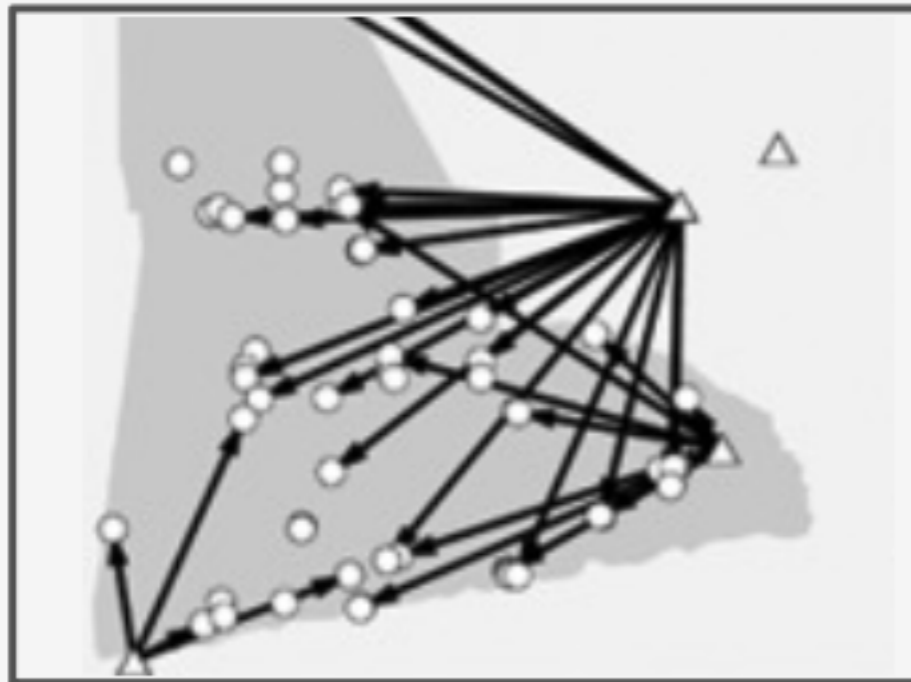
implements

informs

Questions in web survey: diagram



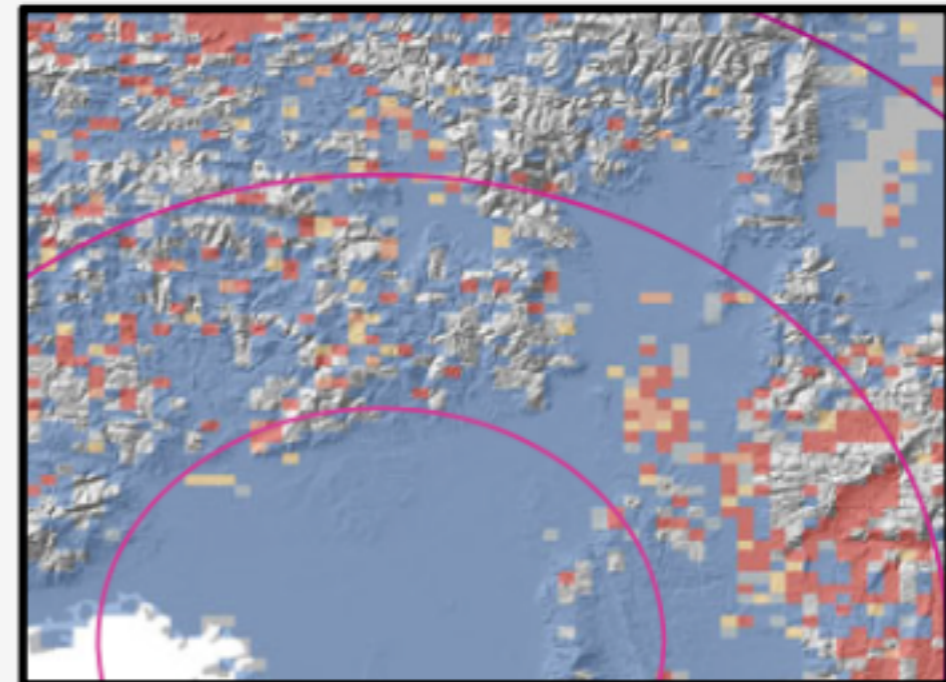
How large is the gaps between food flow and foodshed at city-level ? What logistics strategy will fill the gap?



Food flow mapping

Current food systems

How foods actually distributed from production to consumption



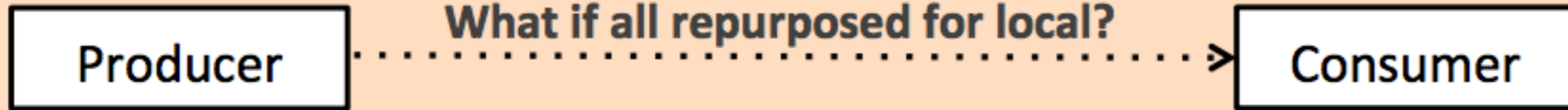
Foodshed mapping

Potential food systems

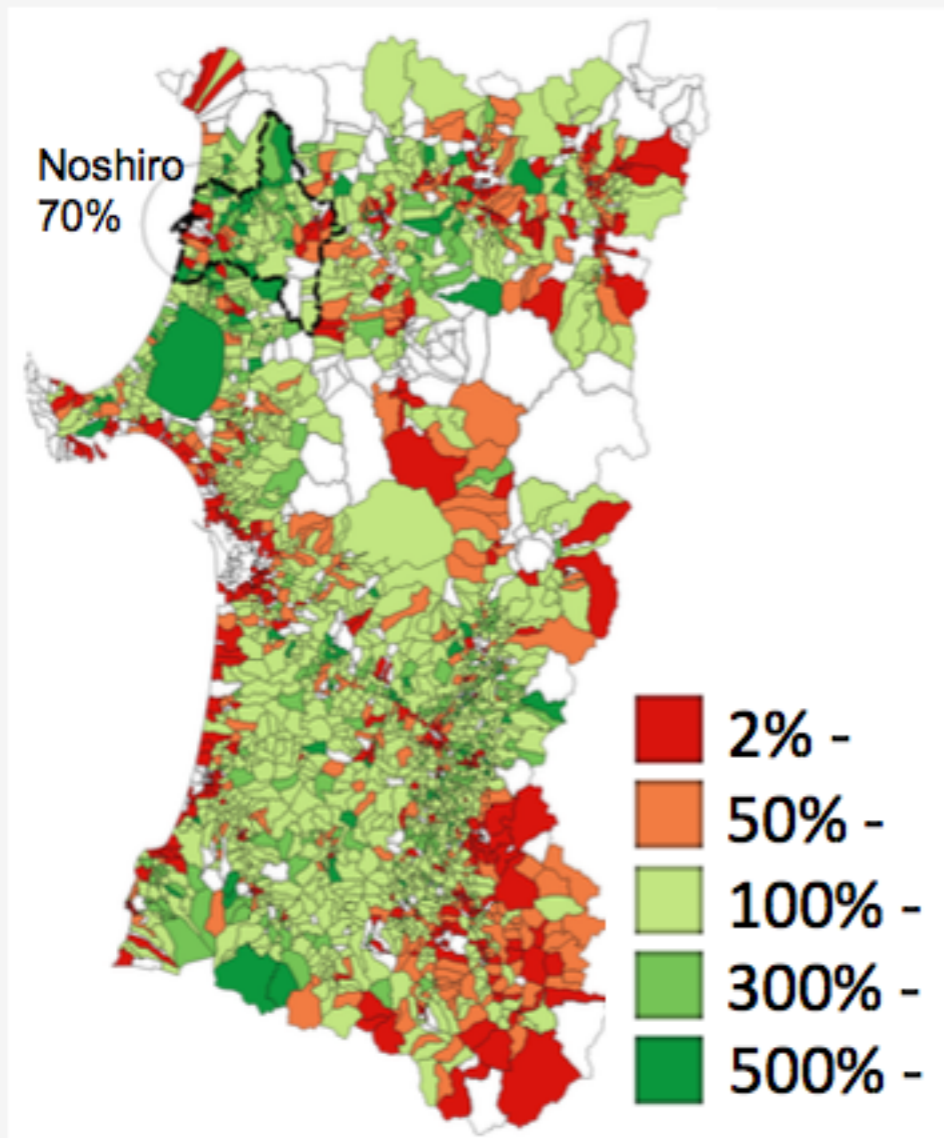
What percentage of consumption can be covered by local production?

(Tsuchiya et al. 2015; Hara et al. 2013)

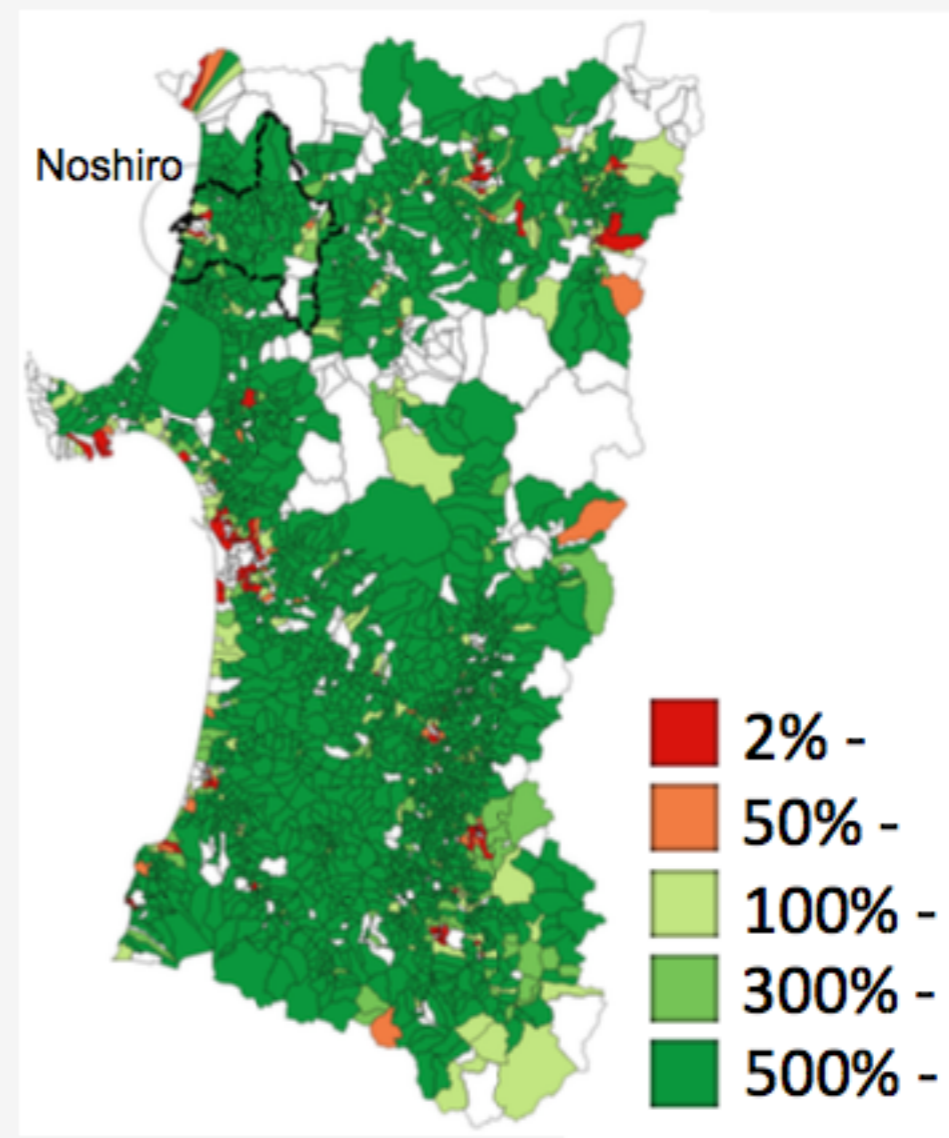
Foodshed analysis: Test trial in Akita



“the fraction of total dietary needs that could be met if all existing croplands were repurposed for local food consumption” (Zumkehr & Campbell 2015)



Vegetable Production/Consumption

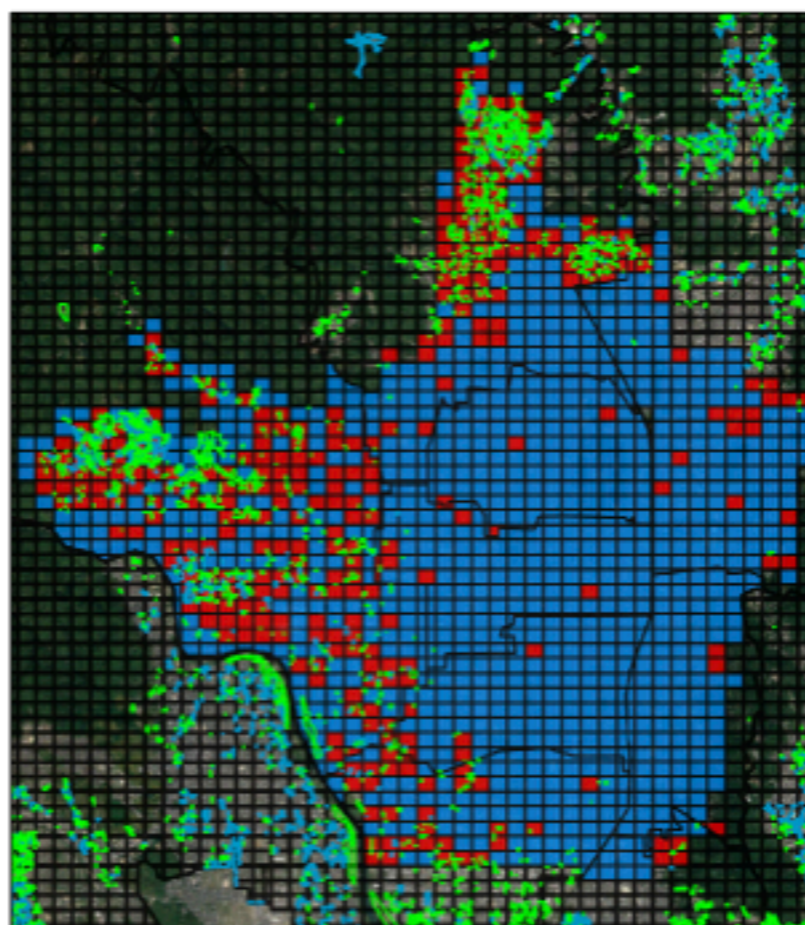
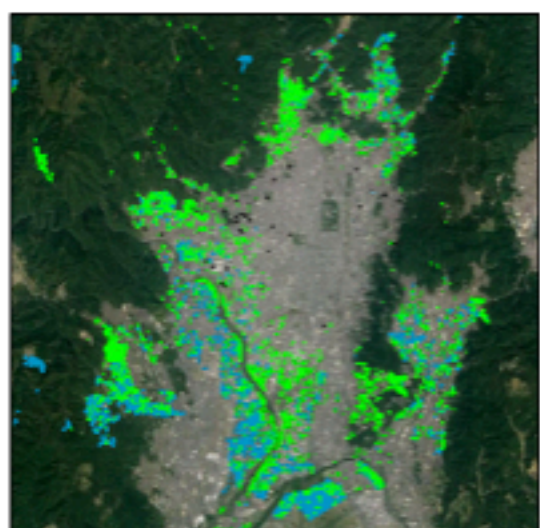


Rice Production/Consumption

SHIFTS IN FORMAL & INFORMAL URBAN PRODUCTION SPACES

KYOTO 2008 → 2015

WG1



Preliminary results

Change in assessment grids

Decline: 347 **No change: 1062**

Agricultural land remains
in Kyoto's outskirts,
but is declining

Land use 2008

(**Fields** • **Rice paddies**)

Visual analysis of change
in agricultural land use
Google Earth 2007 → 2015



Example:

North of Kyoto Botanical Garden

□ remaining Ag use ■ lost Ag use

Agricultural land use, 2015 **109,148 m²**

Lost ag. land, 2007 → 2015 **18,811 m²**

Loss of agricultural land by area:

14.7%





Workshops in Noshiro



「Ideal food futures in Kyoto 2050」 Visioning Workshop

Theme 「Urban-rural linkages」 「Technological innovation」



Food and Human Security Index

FHSI

FAO's founding, 1943 **original spirit of food security**

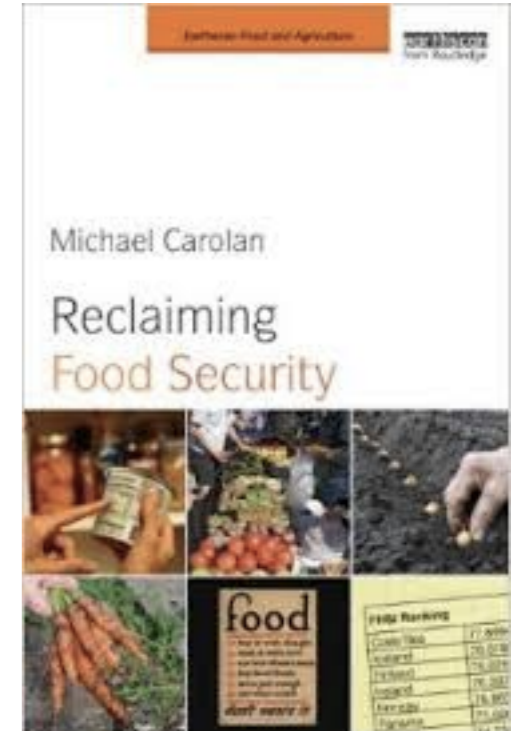
"the goal of freedom from want of food, suitable and adequate for the health and strength of all people can be achieved"

VS.

Calories produced per capita

Assumes that even affluent nations, because of their wealth, are food secure

—> Food deserts, rise in non-communicable disease



Reclaim food security by expanding the definition, using **alternative framings**

well-being

health, diet, happiness

food sovereignty

Import dependence

market concentration

ecological food provisioning

sustainability

environmental impact

Does the FHSI tell the whole story?

Speaking to Asian contexts?

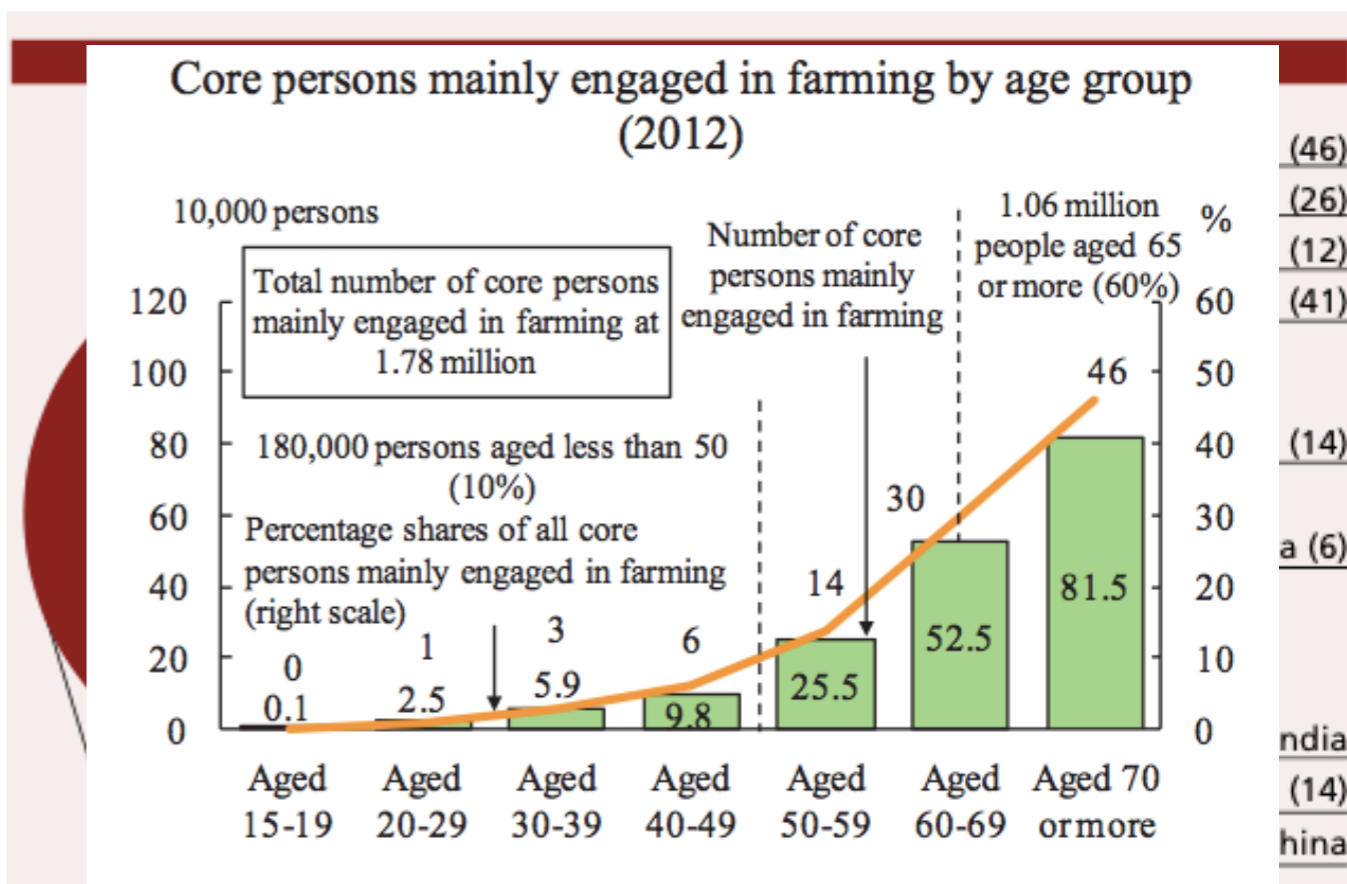
Farmer livelihoods and productive base status

- smallholders, family farming are key
- loss of agricultural land
- farmer aging
- lack of a successor generation

Resilience

- Long-term (ag. production capacities over time, decline of natural capitals, loss of genetic, knowledge diversity, etc.)
- Short-term (emergencies, disasters, etc.)

Table 1: Mean farm sizes worldwide: predominance of small-scale farmers

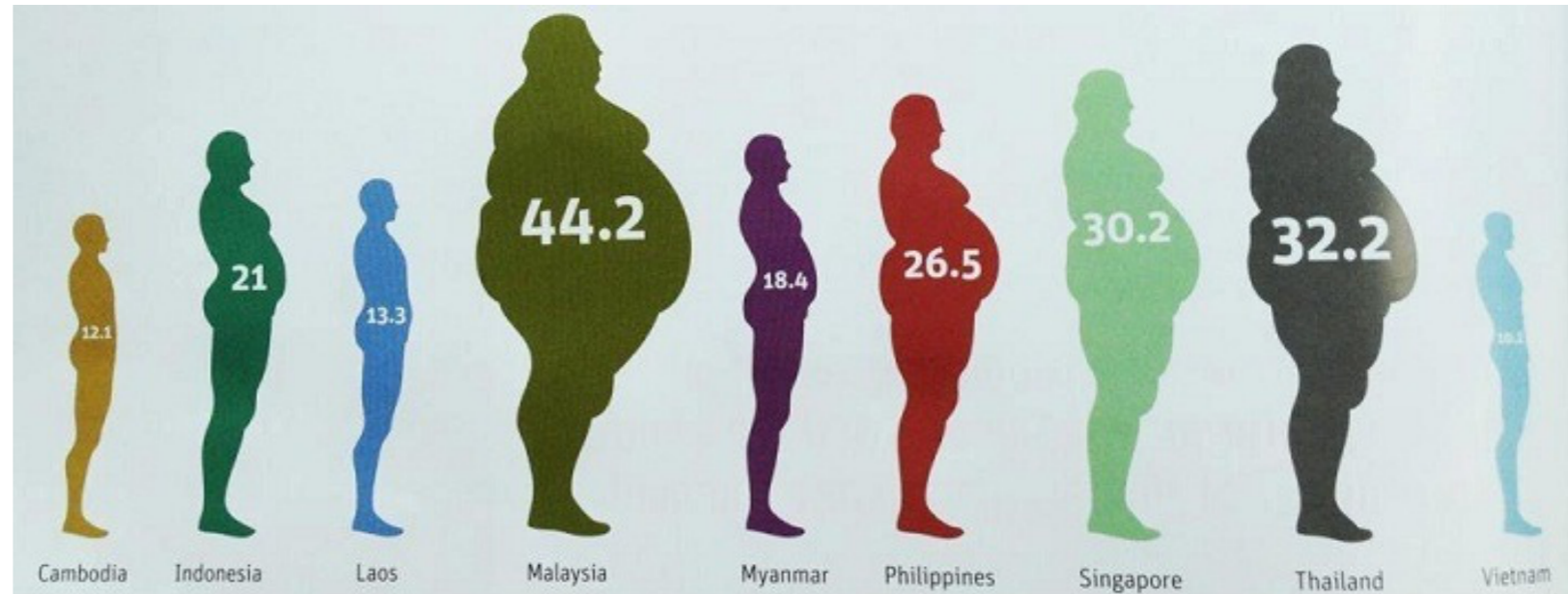


Does the FHSI tell the whole story?

Speaking to Asian contexts?

Erosion of food culture & tradition

- Beyond the “nutrition transition”
- Global food and dietary change*
- Traditional food cultures



BMI > 25%

Other possibilities

- Land ownership (Land grabs)
- Food justice issues (Fairness, equity)
- Vulnerability (dependency on imported foods)

WHO

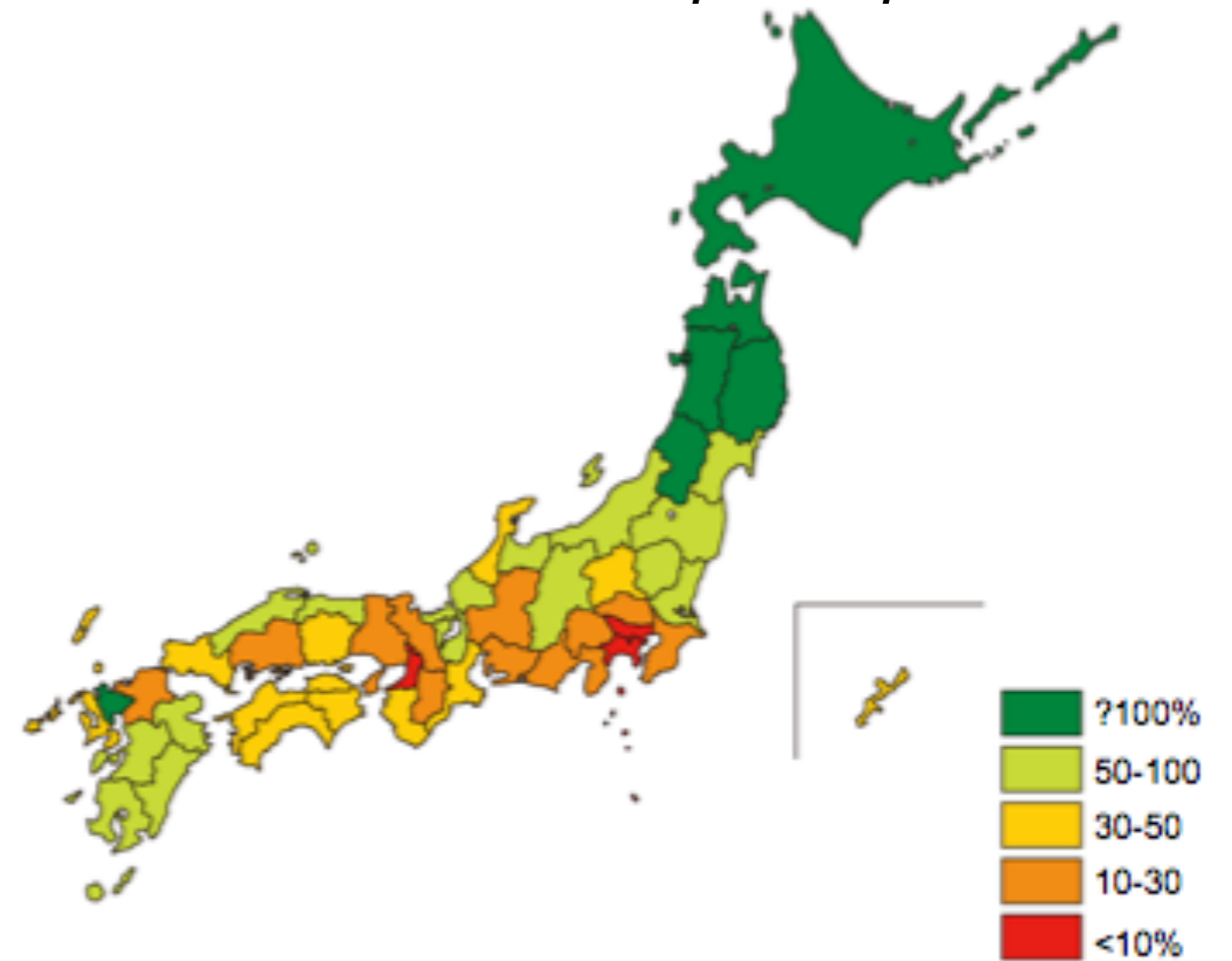
Data sources for Japan

	Conditions	Indicators	Global Data Source	Regional / Local Data Source	
				Regional	City/Town/Village
FHSI	Individual and societal well-being	Life expectancy at birth	WHO	MHLW	Local government statistics
		Life satisfaction	Gallup World Poll	-	Survey
	Ecological sustainability & potential for food independence	Total per capita water food-print as a percentage of total per capita renewable freshwater supply	Hoekstra et al. 2011	-	-
	Ecological sustainability and nutrition	Daily per capita consumption of oils, fats and sugars	WHO	Ratio of food calories derived from fat (MAFF)	Survey
	Freedom in agrifood chain	Supermarket concentration	Planet Retail	MIAC Economic Census (supermarkets/capita)	Desk work
+	Farmer livelihoods & productive base status	% of farmers under age 65	FAO?	MAFF Agricultural Census	MAFF Agricultural Census
		Rate of agricultural land loss	FAO	MAFF	MAFF "My city, my village"
	Resiliency (long and short term)	Self sufficiency * (available ag land / rate of ag land loss)	FAO	MAFF	MAFF "My city, my village"
		Emergency, stockpiled reserves	Japan: MAFF 備蓄米	-	-
	Erosion of food culture	# of fast food restaurants per capita	The Economist	McDonalds, Kentucky Fried Chicken etc.	Desk work
		# of convenience stores per capita	-	Town Pages	Desk work

Regional Trial

Japan- Prefectural Level

Self Sufficiency
(caloric base)
ie. calories per capita



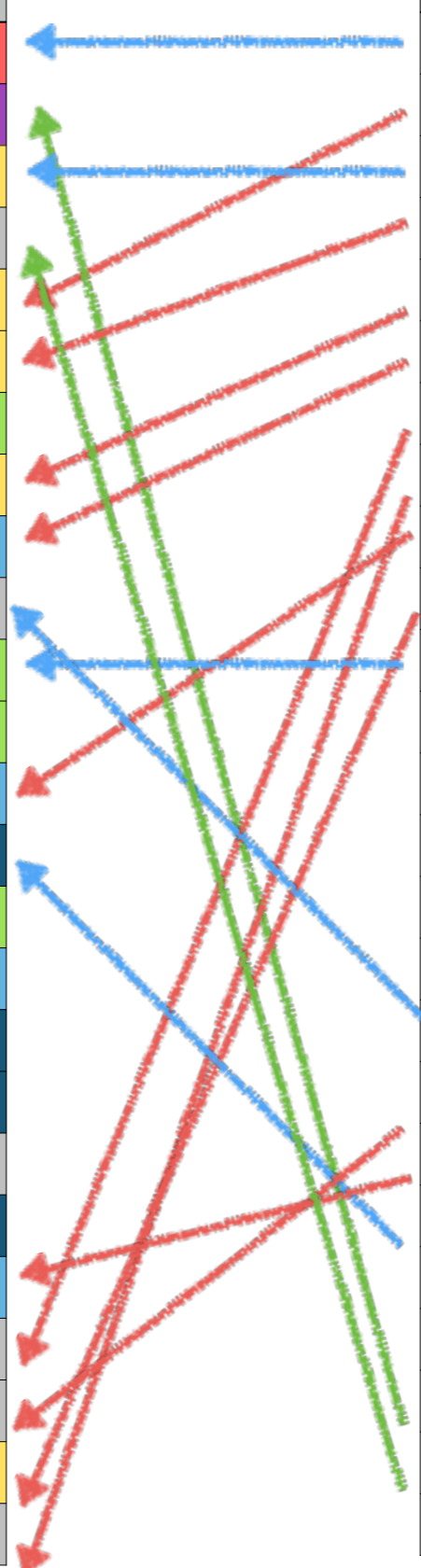
Source: A survey by MAFF
Note: The national self-sufficiency rate is the rate in fiscal 2008.

HLFS Index

			Index	
1	北海道	Hokkaido	0.7867064817357	
2	高知県	Kochi-ken	0.7050924984083	四国
3	山形県	Yamagata-ken	0.6640685539680	東北
4	長崎県	Nagasaki-ken	0.6492083862541	九州
5	秋田県	Akita-ken	0.6488955752694	東北
6	青森県	Aomori-ken	0.6358369648066	東北
7	神奈川県	Kanagawa-ken	0.6317727969392	関東
8	岩手県	Iwate-ken	0.6255218313546	東北
9	新潟県	Niigata-ken	0.6240114878741	中部
10	宮崎県	Miyazaki-ken	0.6182897804482	九州
11	茨城県	Ibaraki-ken	0.6121198403445	関東
12	千葉県	Chiba-ken	0.6102546631397	関東
13	富山県	Toyama-ken	0.6072526449289	中部
14	滋賀県	Shiga-ken	0.6036839516954	関西
15	埼玉県	Saitama-ken	0.6035291819562	関東
16	愛知県	Aichi-ken	0.5996065275588	中部
17	兵庫県	Hyogo-ken	0.5977131367094	関西
18	和歌山県	Wakayama-ken	0.5963039781265	関西
19	福岡県	Fukuoka-ken	0.5960289544567	九州
20	奈良県	Nara-ken	0.5939033104544	関西
21	長野県	Nagano-ken	0.5931310643295	中部
22	佐賀県	Saga-ken	0.5917251168452	九州
23	熊本県	Kumamoto-ken	0.5896360584397	九州
24	福島県	Fukushima-ken	0.588872516832576	東北
25	鹿児島県	Kagoshima-ken	0.5883658963461	九州

Self-sufficiency alone

			2012 Caloric Base	
1	北海道	Hokkaido	200	
5	秋田県	Akita-ken	177	東北
3	山形県	Yamagata-ken	133	東北
6	青森県	Aomori-ken	118	東北
8	岩手県	Iwate-ken	106	東北
9	新潟県	Niigata-ken	103	中部
22	佐賀県	Saga-ken	94	九州
25	鹿児島県	Kagoshima-ken	82	九州
13	富山県	Toyama-ken	74	中部
24	福島県	Fukushima-ken	73	東北
11	茨城県	Ibaraki-ken	72	関東
26	宮城県	Miyagi-ken	72	東北
28	栃木県	Tochigi-ken	72	関東
41	島根県	Shimane-ken	67	中国
47	福井県	Fukui-ken	64	中部
10	宮崎県	Miyazaki-ken	63	九州
32	鳥取県	Tottori-ken	63	中国
23	熊本県	Kumamoto-ken	58	九州
21	長野県	Nagano-ken	53	中部
14	滋賀県	Shiga-ken	50	関西
45	石川県	Ishikawa-ken	49	中部
42	大分県	Oita-ken	48	九州
2	高知県	Kochi-ken	47	四国
4	長崎県	Nagasaki-ken	44	九州
33	徳島県	Tokushima-ken	44	四国



Absolute sustainability assessment

Scaling down planetary boundaries



The absolute environmental performance of buildings



Kathrine Nykjær Brejnrod ^a, Pradip Kalbar ^{b,*,1}, Steffen Petersen ^c, Morten Birkved ^b

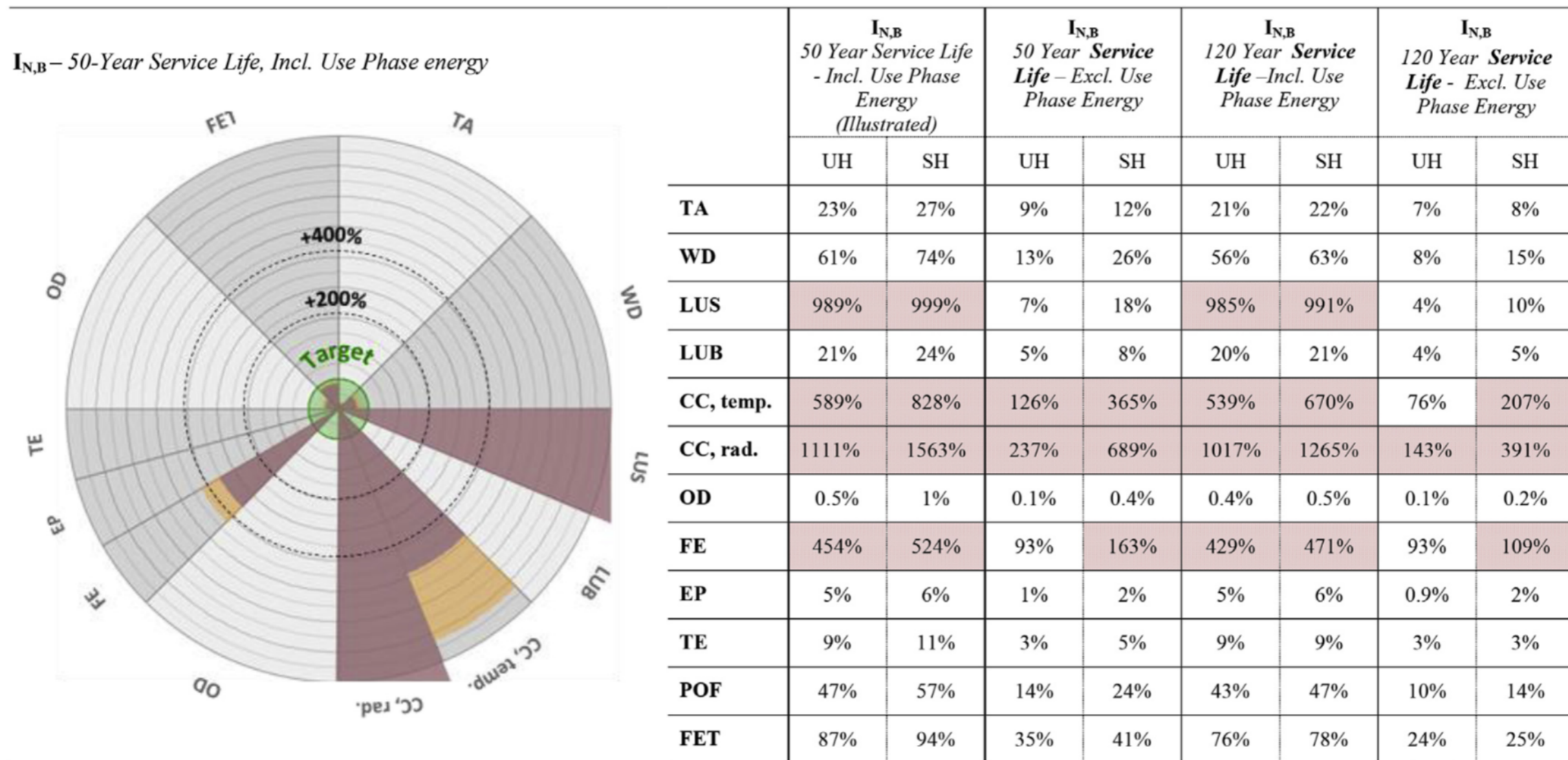
^a Transition Group, Inge Lehmanns Gade 10, DK-8000 Aarhus C, Denmark

^b Quantitative Sustainability Assessment Division, Department of Management Engineering, Technical University of Denmark (DTU), Produktionstorvet 424, DK-2800 Kgs. Lyngby, Denmark

^c Department of Engineering, Inge Lehmanns Gade 10, Aarhus University, DK-8000 Aarhus C, Denmark

Table 7

The normalized results expressed in terms of percentage of normalizing reference value utilized, indicating the case building's utilization of the target values for a dwelling. The results are displayed with a 50-year or a 120-year service life of the buildings and either including or excluding the impact potentials relating to the energy consumption during the entire service life. The circular diagram illustrates the results with a 50-year service life with all impacts included. (UH - Upcycle House, SH - Standard House).



- Upcycle House (Circular Diagram)
- Standard House (Circular Diagram)
- Exceeded Boundary (Table)





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Enough is as good as a feast

feastproject.org