

**The American University of Rome**  
Master in Food Studies and Center for Food Studies  
With the scientific patronage of the European Society for Rural Development

**Proceedings of**

**Conference**

**Sustainable Food Systems ↔ Sustainable Diets**

Rome, Friday, 11 October 2019



Assorted beans and pulses. Credit: Bioversity International/C. Zanzanini

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## Introduction

The Conference on Sustainable Food Systems □ Sustainable Diets , the third biennial Conference of the *Master in Food Studies. Policies for Sustainable Production and Consumption* of The American University of Rome (AUR), was organized on 11 October 2019 with the scientific patronage of the European Society for Rural Development. Its theme was derived from the previous conferences<sup>1</sup> where agricultural practices and forms of partnerships as alternatives to industrial agriculture were discussed. Their potential to steer the transition towards a more sustainable and democratic food system was also appraised. The envisaged transition implied including diets and their composition as the indispensable critical corollary of sustainability in the food system.

## Conference Rationale

There is now ample evidence that food provisioning is a major determinant of the unprecedented and possibly irreversible changes in ecosystems. With high-input, resource-intensive agriculture and overfishing, the planet is facing very serious challenges in terms of freshwater availability, soil degradation, continuing deforestation, loss of biodiversity and depleted marine life. Agriculture, and related land use change contributes around one fifth of total global GHG emissions, at the same time as farming is threatened by climate change. The dysfunction of the contemporary food system is also evinced by the co-existence of more than 800 million people in the world who are chronically undernourished and over 1.9 billion people who are overweight or obese.

With global population projected to reach 9.2 billion people by 2050 and with large parts of the world likely to experience higher household income, agricultural demand is expected to increase by 50%

<sup>1</sup> 2015 Conference on Global Sustainability and Local Foods, AUR, American Academy in Rome; 2017 Democratizing Food Governance, AUR, University of Vermont, University of Naples Federico II.

compared to 2013 (FAO, 2017) with an acceleration of the dietary transition amongst many low- and middle-income countries towards higher consumption of meat and of processed foods high in fats and sugars (Popkin, 2006). Meeting such demand could increase the environmental effects of the food system by 50-90% if no major mitigation measures are taken or technologies devised, putting at risk the planetary boundaries that constitute a safe operating space for humanity (Springmann et al. 2018).

The dietary transition towards “Western diets” with higher consumption of meat, sugars, and fats has been accentuated by urbanization, globalization and developments in the food systems that have led to concentration of control in a very small number of corporations. With increased separation between the places of production and consumption, citizen-consumers know less about where their food comes from, the impact of their consumption practices on distant producers and the extent to which their food choices, and the prices that influence them, are derived from distant farmlands and seas.

There is consensus that less resource-intensive diets are absolutely necessary for mitigating climate change and that a shift towards more sustainable diets with a lower environmental footprint will reduce the pressure on the use of land, bluewater and freshwater resources and reduce pollution of aquatic and terrestrial ecosystems (Willett, et al. 2019; IPCC, 2018; Springmann et al, 2018; Burlingame and Dernini, 2018; Mason and Lang, 2017; Tilman and Clark, 2014; Bioversity International and FAO, 2012). At the same time, it is recognized that changing consumption habits is a complex endeavor that goes beyond individual behavior and involves collective social and institutional changes (Warde, 2017).

The Conference encouraged to debate how changes in consumption practices can impact on the sustainability of the food system and the challenges described above. What is a sustainable diet in different countries, for different populations and geographic contexts? Which are the obstacles that hinder the transition towards more sustainable consumption practices? How to transition towards climate-resilient development pathways? What is the response of the food industry? Which policies might enable the desirable transitions and transformations? Which new narratives may represent new directions in food consumption and food systems towards sustainable goals?

Bioversity International and FAO, 2012. *Sustainable Diets and Biodiversity. Directions and Solutions for Policy, Research and Action*, eds. Burlingame, M. and Dernini,

Burlingame, B. and Dernini, S. (eds) 2018. *Sustainable Diets: Linking Nutrition and Food Systems*, CABI.

FAO, 2017. *The future of food and agriculture. Trends and Challenges*, Rome.

IPCC, 2018: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press

Mason, P. and Lang, T. 2017. *Sustainable Diets. How Ecological Nutrition Can Transform Consumption and the Food System*, Earthscan.

Popkin B.M., 2006. Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *Am J Clin Nutr.* 2006; 84:28998.

Springmann, M., et al., 2018. Options for keeping the food system within environmental limits. *Nature* 562(7728): 519-525.

Tilman, D. and Clark, M. 2014. Global diets link environmental sustainability and human health, *Nature*, 515, 518-522.

[Warde, A., Welch, D., & Paddock, J. 2017. \*Studying consumption through the lens of practice: Routledge Handbook on Consumption\*. In M. Keller, B. Halkier, T-A. Wilska, & M. Truninger \(Eds.\), \*Handbook on Consumption\* \[1.3\] Routledge.](#)

Willett, W. et al., 2019. *Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems*, The Lancet Commissions, Vol. 393, Issue 10170.

### Aims of the Conference

In the context of the environmental challenges raised above, the aim of the Conference is to invite contributions that are both theoretically and empirically informed that address:

- efforts across different contexts to change food consumption practices in sustainable directions
- policies, research and investments conducive to fostering the desirable transformations of the food system and dietary practices
- critical assessments of the potential of social and technological innovations (e.g. novel foods) to shape production and consumption practices towards greater sustainability

### Keynote speakers

**Harriet Friedmann**, Professor Emerita of Sociology, University of Toronto

**Tim Lang**, Professor of Food Policy, City, University of London

### Invited discussant

**Colin Sage**, Senior Lecturer in Food Geography, University College Cork

### Organizing and Scientific Committee

**Maria Grazia Quieti** (Chair), Program Director, Master in Food Studies, The American University of Rome

**Maria Fonte** (Chair), Associate Professor, Economics, Management and Institutions Department of the University of Naples Federico II

**Harriet Friedmann**

**Tim Lang**

**Colin Sage**

### Faculty of the Master in Food Studies of The American University of Rome

Emilio Cocco

Arianna Consolandi

Gaia Cottino

Ivan Cucco

Livia Ortolani

Valentina Peveri

Emily Pierini

Laura Prota

Mohan Rao  
Paola Termine

### Conference implementation

The Conference was attended by 90 participants, many of them young researchers, Ph.D. candidates and AUR alumni as well as students from Roma Tre and Gustolab. Furthermore, the Conference was attended by researchers from Bioversity International and the Food and Agriculture Organization of the U.N. The full list of participants is given in Annex1.

Sixty-five papers were presented covering the areas of consumers' behavior, the role of food procurement institutions, socio-technical innovations, place-based agricultural production including bio-cultural resources and new farming practices. Their different disciplinary perspectives including nutrition, economics, sociology, anthropology, agronomy, environmental sciences, architecture and urban planning demonstrated the richness and relevance of interdisciplinary dialog. Empirical evidence on both consumption and production practices was reported from countries with a wide range of different socio-economic and ecological contexts including Europe (Austria, Bulgaria, Finland, Germany, Hungary, Iceland, Ireland, Italy, Norway, Sweden, Switzerland), but also other countries as far away and as diverse as Algeria, Argentina, Australia, Brazil, Canada, Costa Rica, Egypt, Ethiopia, Kenya, Palestine, Sri Lanka, Turkey, the United States and Vietnam.

Seven parallel sessions were organized:

1. Sustainable diets: operationalization and impact
2. Consumers and healthy diets
3. Food procurement and role of institutions
4. Food system sustainability: social and technical approaches
5. Sustainable agricultural production
6. Sustainable spaces and scaling
7. Bio-cultural resources and new farming practices

### Conference Program

#### **The American University of Rome, Auriana Auditorium, Via Pietro Roselli 16**

9:00-9:30	Registration at the main garden gate of campus (Via Pietro Roselli 2)	
9:30-9:45	Welcoming remarks, Auriana Auditorium	Genevieve Gessert, Dean of Academic Affairs, The American University of Rome
9:50-10:20	Diets and Cuisines in Biocultural Landscapes	Chair: Maria Grazia Quieti Keynote speaker: Harriet Friedmann, Professor Emerita of Sociology, University of Toronto

10:20-10:50	The Mismatch of Food System Dynamics and Diet: forward to the past or something new?	Keynote speaker: Tim Lang, Professor of Food Policy, City, University of London
11:00-11:30	Coffee Break, AUR garden	
11:30-13:30	<b><u>Parallel Sessions, AUR main campus</u></b>	<b><u>Classroom Number</u></b>
	1. Sustainable Diets: Operationalization and Impact	Garden 1
	2. Consumers and Healthy Diets	Garden 2
	3. Food Procurement and Role of Institutions	B-105
	4. Food Systems Sustainability; Social and Technical Approaches	B-106
	5. Sustainable Agricultural Production	B-104
	6. Sustainable Spaces and Scaling	B-204
	7. Bio-Cultural Resources and New Farming Practices	B-205
13:30-15:00	Lunch, AUR garden	
15:00-17:30	Reports by the seven parallel groups Auriana Auditorium	Chairs: Maria Grazia Quieti Maria Fonte
17:30-18:00	Rapporteur	Colin Sage, Senior Lecturer in Food Geography, University College Cork
18.00-19.00	Mix and mingle - Farewell drinks	

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### **Keynote Speakers' Presentations**

Harriet Friedmann gave a presentation on Diets and Cuisines in Biocultural Landscapes (in Annex 2) and Tim Lang talked about The Mismatch of Food System Dynamics and Diet: forward to the past or something new? (in Annex 3)

The bios of the keynote speakers can be found in Annex 4.

**List of Abstracts by parallel session** - the text of the abstracts is in Annex 5.  
(presenter names in bold print)

### **Session 1: Sustainable Diets: Operationalization and Impact**

<b>FISCHER, Christian</b>	Avoiding Malthus 2.0: the links between human diets and health and climate outcomes in the world's macro-regions during the last 50 years
<b>HOEY, Lesli</b> SHIRES, Anna JUDELSON, Anna KHOURY, Colin THI, Thanh Duong BINGE, Brenda JALANGO, Dorcas OSIEMO, Jamleck TRINH, Huong HUYNH, Tuyen DE HAAN, Stef GIRVETZ, Evan HELLER, Martin C. JONES, Andrew D.	Institutional and data limitations to operationalizing sustainable diets: Perspectives from Kenya and Vietnam
<b>ROSE, Diego</b>	Towards a sustainable food system in the United States: Opportunities to address environmental impacts through food and nutrition policies
<b>VASCONCELOS, Marta</b>	The role of legumes in current diets
<b>BALÁZS, Bálint</b>	Governance solutions for legume-based food systems
<b>ALSAYED, Lubana</b> <b>PIATTI, Cinzia</b>	Connecting food security, food-related well-being and sustainable diets - the case of migration
<b>PADULA DE QUADROS, VICTORIA</b> BALCERZAK, A SOUSA, R. F. FERRARI, M SCHMIDT RIVERA, X. REYNOLDS, C.J. DA SILVA, J. T. BRIDLE, S. L. LECLERCQ, C.	Using individual food consumption data to estimate the environmental impact of diets: the potentiality of the FAO/WHO GIFT platform

**RAZA, Ahmed** Fostering greater investments across food systems for better nutrition and healthy diets: the case of Palestine

## **Session 2: Consumers and Healthy Diets**

**SIMEONE, Mariarosaria** Consumer orientation towards food sustainability and safety attributes  
**SCARPATO, Debora**  
**RUSCIANO, Vincenzo**  
**CIVERO, Gennaro**  
**ROTONDO, Giacomo**

**MATTIONI, Dalia** Healthy diets and the retail food environment: a sociological approach  
**LOCONTO, Allison Marie**  
**BRUNORI, Gianluca**

**POLENZANI, Bianca** Sustainability perception of local Extra Virgin Olive Oil and consumers' attitude: a new Italian perspective  
**RIGANELLI, Chiara**  
**MARCHINI, Andrea**

**ORLANDO, Giovanni** Sustainable diets or fearful diets? Trying to make sense of organic food consumption in a polluted world

**VASILE, Maria** "What is a sustainable diet?" Insights from the study of collective food procurement networks  
**GRASSENI, Cristina**

**BIMBI, Franca** What food are we talking about? Narratives of Mediterranean healthy and sustainable diet(s) confronting with cultural expectations, local food habits and gender feeding rules  
**STORATO, Giulia**

**NARCISO, Alessandra** Towards EU Sustainable Dietary Guidelines to promote health and sustainable diets  
*Quality schemes in the modern approach of EU Food Law: A new comprehensive food labelling and a renewed role of geographical indications*

## **Session 3: Food Procurement and Role of Institutions**

**SWENSSON, Luana F.J.** Institutional food procurement for sustainable diets and food systems: A policy instrument that benefits all  
**TARTANAC, Florence**  
**HUNTER, Danny**

**ELNAKIB, Sara** Food Service Training to Create Sustainable and Food Secure School Food Systems.

**MORAN, Theresa** University Food Procurement and Growing a Regional, Sustainable Food System: The Case of Ohio University  
**BELL, David**

**MASSARI, Sonia** Food Security and Sustainable Diets, Formal and No-Formal Education in Campus: current perceptions and future challenges  
**ALLIEVI, Francesca**

**ALBERDI, Goiuri** RENASCENCE: The Role of European National Health Services in the Enhancement of Sustainable Food Systems  
**ZUBILLAGA, M. Begiristain**



<b>MILLS, Margaret</b>	Examining the Role of Board Governance Education on Food Security and the Right to Food in Vancouver's Downtown Eastside
ANTONELLI, Marta CASTALDI, Simona DEMBSKA, Katarzyna MAGNANI, Andrea VAROTTO, Alessandra <b>PETERSSON, Tashina</b> BOUWMAN, Laura VALENTINI, Riccardo	Reducing carbon emissions and water footprints through sustainable diet promotion in university and company's canteens: the SUEATABLE Life project

#### **Session 4: Food Systems Sustainability: Social and Technical Approaches**

<b>DAL GOBBO, Alice</b> FORNO, Francesca MAGNANI, Natalia	Food, Sustainability and Digital Platforms. Understanding the role of social and technological innovations in sustainable consumption
<b>KHAJEHEI, Forough</b> PIATTI, Cinzia GRAEFF-HÖNNINGER, Simone	Sustainable diets and novel food technologies
<b>ORSTE, Lina</b> OZOLA, Lasma LEMBERGA, Krista KILIS, Emils ADAMSONE-FISKOVICA, Anda GRIVINS, Mikelis TISENKOPFS, Talis	Conceptualizing and Identifying Social Innovation in Agri-Food Systems
<b>STEFANOVA, Milena</b> IANNETTA, Massimo	Revisiting the theory of change of Life Cycle Assessment: how Life Cycle Thinking contributes to food sustainability?
SAGET, Sophie PORTO COSTA, Marcela STYLES, David <b>WILLIAMS, Mike</b>	Environmental Life Cycle Assessment of Durum Wheat Pasta and Chickpea Pasta
<b>GIORDANO, Claudia</b> CICATIELLO, Clara PANCINO, Barbara FALASCONI, Luca	Research and policy path towards the reduction of food waste in Europe: a preliminary assessment
<b>KENNY, Tara</b>	The implications of the charitable food system in the quest for sustainable diets
<b>KANERVA, Minna</b>	The role of discourses in a transformation of social practices towards sustainability. The case of meat eating related practices

### **Session 5: Sustainable Agricultural Production**

<b>JÓNSDÓTTIR, Salvör</b>	Moving towards sustainable food production - starting with agricultural land classification
<b>NELSON, Lauren</b>	Natural Resource Management in Hawaii
<b>TERMINE, Paola</b>	Sustainability of agro-food systems and rural migration. A conceptual framework to analyze the “missing link” between agricultural development and the migration decision.
<b>KOVÁCH, Imre</b>	Between individual and community values: Factors influencing food self-provisioning in Hungary
<b>MEGYESI, Boldizsár</b>	
<b>DOURIAN, Tara</b>	Re-peasantization strategies: Potential catalysts for dietary sustainability?
<b>CRAVIOTTI, Clara</b>	Exploring the feasibility for transitions towards a sustainable food system in the Argentinean foodscape

### **Session 6: Sustainable Spaces and Scaling**

<b>BOYKOV, Georgi</b>	Deurbanization as possibility for sustainable food systems
<b>FODOR, Kata</b>	Kitchen Think-Over: Towards an Architecture & Urban Design for Sustainable Diets
<b>LÓPEZ CIFUENTES, Marta</b> FREYER, Bernhard	Identifying drivers of Vienna’s Urban Food System: towards a sustainable diet
<b>MAZZOCCHI, Giampiero</b> MARINO, Davide	A Food Policy for Rome: the path for the transition towards a sustainable Roman food system
<b>AZZINI, Elena</b> BARNABA, L. INTORRE, F. CIARAPICA, D. VERRASCINA, M. ZANETTI, B. MONTELEONE, A. POLITO, A.	Sustainable food production and consumption in a restricted area within Majella National Park
<b>COTTINO, Gaia</b>	"We are the food Talibans". Building sustainable food systems in the Italian Western Alps
<b>LÅNGVALL, Annica</b> WALTER, Ute MÜLLER, Dieter BENGS, Carita	Culinary Spaces in Northern Sweden and its implications for regional sustainable development

## Session 7: Bio-Cultural Resources and New Farming Practices

HUNTER, Danny BORELLI, Theresa WASIKE, Victor SAMARASINGHE, Gamini MOURA DE OLIVEIRA BELTRAME, Daniela SALANTUR, Ayten <b>GEE, Eliot</b> MINES, Anna TARTANAC, Florence	Neglect me not: plants of the past are foods for the future
IVANOVA, Teodora GANEVA-RAYCHEVA, Valentina BOSSEVA, Yulia <b>DIMITROVA,</b> Dessislava	Agrobiodiversity in rural Bulgaria – plant genetic resources and biocultural transformations
<b>PEVERI, Valentina</b>	From the Standpoint of an Ethiopian Plant: Reflections upon <i>Radical Sustainability</i>
<b>LAZZARINI, Gianna</b> CURRAN, Michael BAUMGART, Lukas SCHADER, Christian	Sustainability, who cares? Identifying drivers of farm sustainability performance in organic farms in Switzerland
ROCCHI, Benedetto <b>RANDELLI, Filippo</b> CORSINI, Lorenzo GIAMPAOLO, Sabina	On-farm and regional factors affecting the decision of direct selling in Italy.
<b>CANAL VIEIRA,</b> <b>Leticia</b>	The contribution of Australian alternative food networks to sustainable food consumption practices

## Annex 1. List of participants

### Conference Chairs

<p>Maria Grazia QUIETI Program Director, M.A. in Food Studies The American University of Rome Rome, Italy</p>	<p>Maria FONTE Adjunct Faculty, M.A. in Food Studies The American University of Rome Former Associate Professor University of Naples Federico II Rome, Italy</p>
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### Keynote Speakers

<p>Harriet FRIEDMANN Professor Emerita of Sociology University of Toronto Toronto, Canada</p>	<p>Tim LANG Professor of Food Policy University of London London, England</p>
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### Rapporteur

<p>Colin SAGE Senior Lecturer in Food Geography, University College Cork Cork, Ireland</p>	
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### Speakers

<p>Lubana AL SAYED Ph.D. Candidate Hohenheim University Stuttgart, Germany</p>	<p>Gaia COTTINO Adjunct Faculty The American University of Rome Rome, Italy</p>
<p>Goiuri ALBERDI Post-Doctoral Researcher University of the Basque Country Leioa, Spain</p>	<p>Clara CRAVIOTTI Research Fellow National Council of Scientific and Technical Research (CONICET) University of Buenos Aires, Argentina</p>
<p>Elena AZZINI Researcher Research Centre for Food and Nutrition (CREA) Rome, Italy</p>	<p>Alice DAL GOBBO Research Fellow Trento University Trento, Italy</p>

<p>Bálint BALÁZS Senior Research Fellow, Executive Manager Environmental Social Science Research Group (ESSRG) Gödöllő, Hungary</p>	<p>Dessislava DIMITROVA Associate Professor Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences Sofia, Bulgaria</p>
<p>Franca BIMBI Professor Emerita University of Padova Padua, Italy</p>	<p>Tara DOURIAN M.A. Food Studies Alumna The American University of Rome Sorède, France</p>
<p>Giorgi BOYKOV Researcher Rilski Center for Natural and Social Sciences Sofia, Bulgaria</p>	<p>Sara ELNAKIB Assistant Professor Rutgers University New Jersey, USA</p>
<p>Leticia CANAL VIEIRA Ph.D. Candidate Griffith University South East Queensland, Australia</p>	<p>Christian FISCHER Professor Free University of Bozen-Bolzano Bolzano, Italy</p>

<p>Kata FODOR Ph.D. Candidate Aalto University Helsinki, Finland</p>	<p>Annica LÅNGVALL Ph.D. Candidate Umeå University, School of Restaurant and Culinary Arts Umeå, Sweden</p>
<p>Eliot GEE Research Fellow Bioversity International New York, USA</p>	<p>Gianna LAZZARINI Scientist Research Institute of Organic Agriculture FiBL Frick, Switzerland</p>
<p>Claudia GIORDANO Post Doc Researcher The Department of Agro-food Sciences and Technologies (DISTAL), UniBO Bologna, Italy</p>	<p>Marta LÓPEZ CIFUENTES Researcher University of Natural Resources and Life Sciences Vienna, Austria</p>
<p>Lesli HOEY Assoc. Prof. of Urban and Regional Planning University of Michigan Michigan, USA</p>	<p>Sonia MASSARI Faculty &amp; Director Roma Tre University, Gustolab International Rome, Italy</p>

<p>Salvör JÓNSDÓTTIR Ph.D. Student University of Iceland Reykjavík, Iceland</p>	<p>Dalia MATTIONI Food Systems Consultant Food and Agriculture Organization of the United Nations (FAO) Rome, Italy</p>
<p>Minna KANERVA Researcher Sustainability Research Center University of Bremen Bremen, Germany</p>	<p>Giampiero MAZZOCCHI Ph.D. Candidate La Sapienza Rome, Italy</p>
<p>Tara KENNY Irish Research Council Scholar; PhD Candidate UCC Cork College Cork, Ireland</p>	<p>Boldizsár MEGYESI Research Fellow, Centre for Social Studies Hungarian Academy of Sciences Budapest, Hungary</p>
<p>Forough KHAJEHEI Ph.D. Candidate University of Hohenheim, Dept of Crop Science Stuttgart, Germany</p>	<p>Margaret MILLS Master of Environmental Studies Candidate Wilfrid Laurier University British Columbia, Canada</p>
<p>Theresa MORAN Director, Food Studies Ohio University Ohio, USA</p>	<p>Cinzia PIATTI Post-Doctoral Research Associate and Lecturer Hohenheim University Stuttgart, Germany</p>
<p>Alessandra NARCISO Researcher National Research Council (ISEM-CNR) Rome, Italy</p>	<p>Bianca POLENZANI Ph.D. Candidate University of Perugia Perugia, Italy</p>
<p>Lauren NELSON Master's Graduate University of Gastronomic Sciences Rome, Italy</p>	<p>Filippo RANDELLI Associate Professor University of Florence Florence, Italy</p>
<p>Giovanni ORLANDO Independent Researcher Palermo, Italy</p>	<p>Ahmed RAZA Nutrition and Food Systems Officer Food and Agriculture Organization of the United Nations (FAO) <u>Rome, Italy</u></p>

<p>Lina ORSTE Baltic Studies Center Riga, Latvia</p>	<p>Diego ROSE Professor and Director of Nutrition Tulane University Louisiana, USA</p>
<p>Victoria PADULA DE QUADROS International Nutrition Consultant Food and Agriculture Organization of the United Nations (FAO) Rome, Italy</p>	<p>Mariarosaria SIMEONE Assistant Professor University of Sannio Rome, Italy</p>
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<p>Paola TERMINE Adjunct Faculty The American University of Rome Rome, Italy</p>	<p>Michael WILLIAMS Professor Trinity College Dublin Dublin, Ireland</p>
<p>Marta VASCONCELOS Assistant Professor Catholic University of Portugal Porto, Portugal</p>	

## MA Food Studies Students The American University of Rome

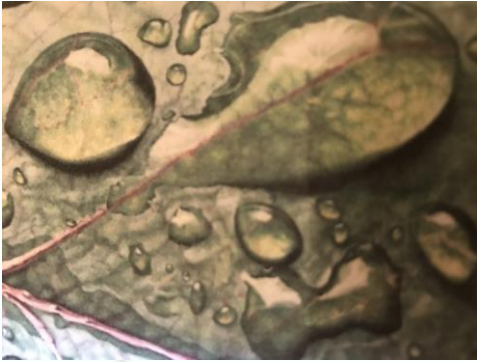
Sophia BRADDEL	Lorenzo MARELLI
Bailyn BRINK	Anna MINES
Julia BUCKINGHAM	Savannah OAKES
Alexa CAESAR	Eva REYNOLDS
Natalie CHING	Teaghan ROSE
Kaylie-Ann FLANNIGAN	Razia SULTANA
Nora HARTMANN	Teddy TOMAO
Mahinur ISLAM	Amanda WAKEFIELD
Sami KINGRY	Haley ZAREMBA

## Registered Participants

Daniela BERNASCHI Ph.D. Candidate University of Florence Florence, Italy	Arshinder KAUR Researcher LUMSA University Rome, Italy
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Christina CANNOVA Student Gustolab Int'l Food Systems & Sustainability Rome, Italy	Eugenia MORPURGO Fellow The American Academy in Rome Rome, Italy



<p>Nina COATES  Agribusiness Project Officer  Food and Agriculture Organization of the  United Nations (FAO)  Rome, Italy</p>	<p>KC Anne ORTEGA  Staff  Gustolab Int'l Food Systems &amp; Sustainability  Rome, Italy</p>
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<p>Arianna CONSOLANDI  Adjunct Faculty  The American University of Rome  Rome, Italy</p>	<p>Nadine SAN ANTONIO  Culinary Educator, Slow Food / Chef  New Hampshire, USA</p>
<p>Amanda EDMONDS  Consultant  Ealing, London, England</p>	<p>Tanya SAYYED  The American University of Rome Alumna  Rome, Italy</p>



Moving Diets in the Right Direction:  
Can Sustainable =>  
Regenerative?

Harriet Friedmann, Professor Emerita  
University of Toronto



**Sustainable Food Systems < > Sustainable Diets**

American University of Rome

# We Know What to Do

## The Planetary Health Plate



**EAT-Lancet Commission:  
Food, Planet, Health**

#foodcanfixit #EATLancet

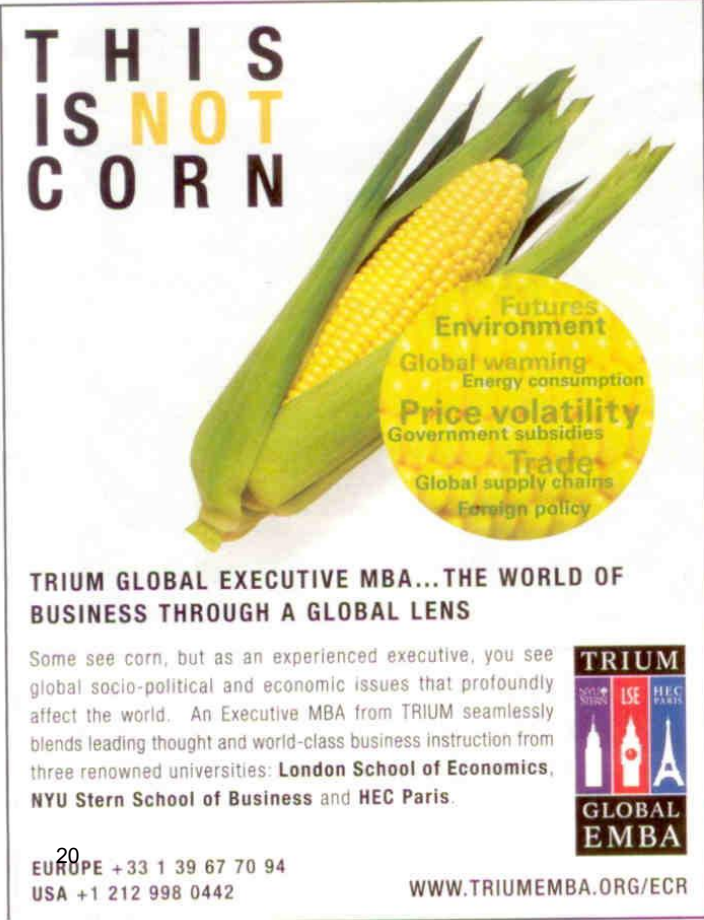
E  
A

## Confusion: What is “Food”

**The shortest possible economic history of...agriculture during the 20th century would be this: non-farmers learning how to make money from farming.”**

-Richard Levins

97



**T H I S  
IS NOT  
C O R N**

Futures  
Environment  
Global warming  
Energy consumption  
Price volatility  
Government subsidies  
Trade  
Global supply chains  
Foreign policy

**TRIUM GLOBAL EXECUTIVE MBA... THE WORLD OF BUSINESS THROUGH A GLOBAL LENS**

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GLOBAL  
EMBA

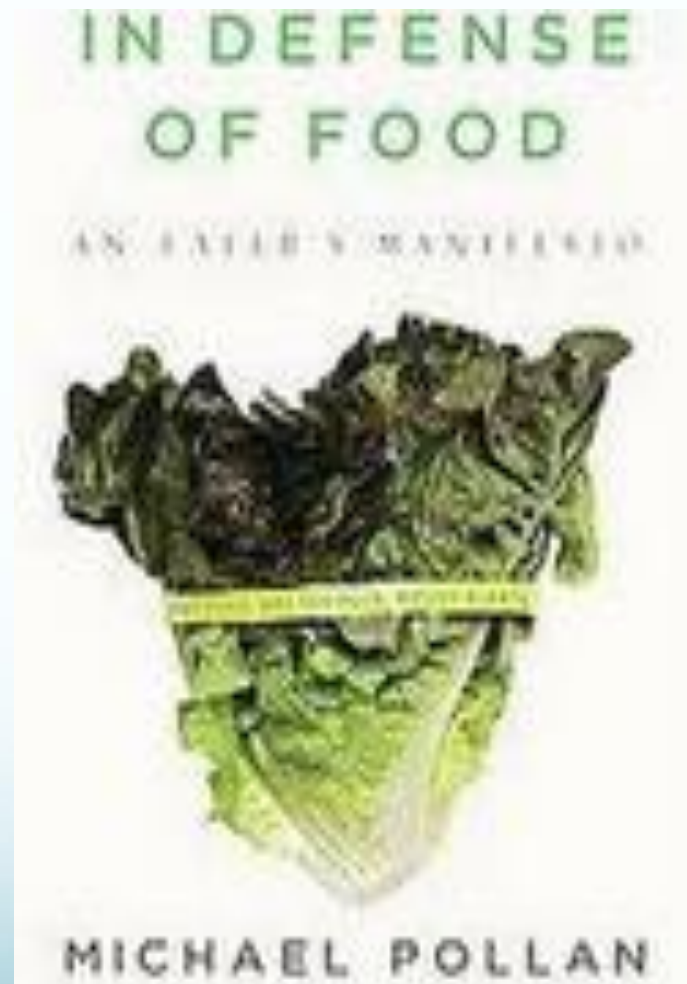
20  
EUROPE +33 1 39 67 70 94  
USA +1 212 998 0442  
[WWW.TRIUMEMBA.ORG/ECR](http://WWW.TRIUMEMBA.ORG/ECR)

# Pollan's 7 word rule for eating sustainably

Eat Food

Not too much

Mostly Vegetables



# Brazil's food guide is a lesson for us all

## Toronto *The Bulletin (Toronto)* December 10, 2016

A  
V  
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D



SHARE





[www.foodshare.net](http://www.foodshare.net) | [@FoodShareTO](https://www.instagram.com/FoodShareTO)



From My City: Two Short Social Markets:  
Regional and Long Distance (Horizontal)

# We Know What to Do

What NOT to do





# Core, Protein, Fringe were basis of Agrarian Civilizations (Sidney Mintz):



Farmers of Forty Centuries (King<sup>25</sup>)

# Animals in Rice Systems: Fertilizer and Pest Control



# People Live and Work Individually and Together



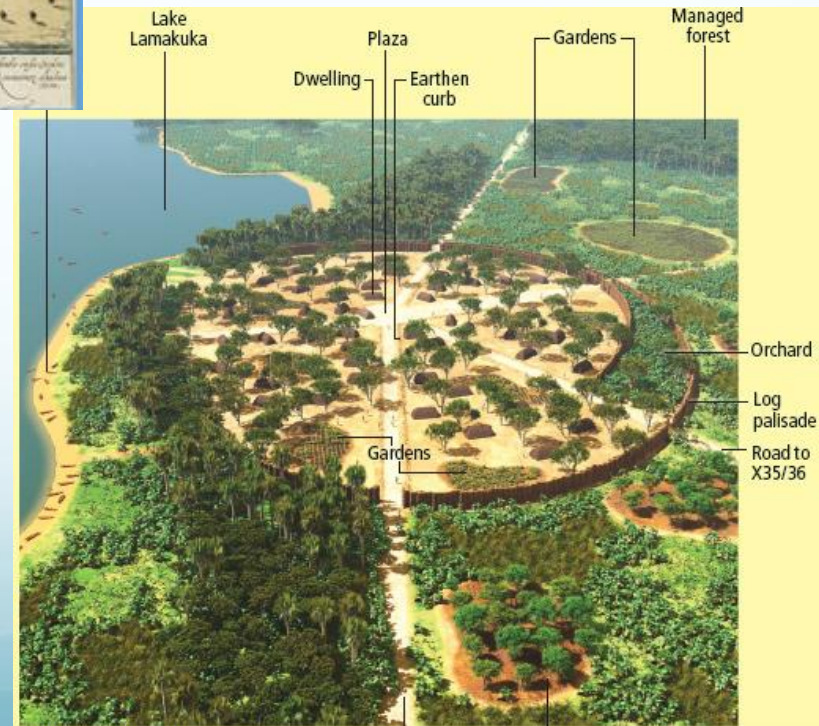


Before 1500

Cities were embedded in their Biomes

Kuhikugu: the largest in a network of urban centers in the Southern Amazon (Mato Grosso): with manioc cultivation, terra preta, and fish farming

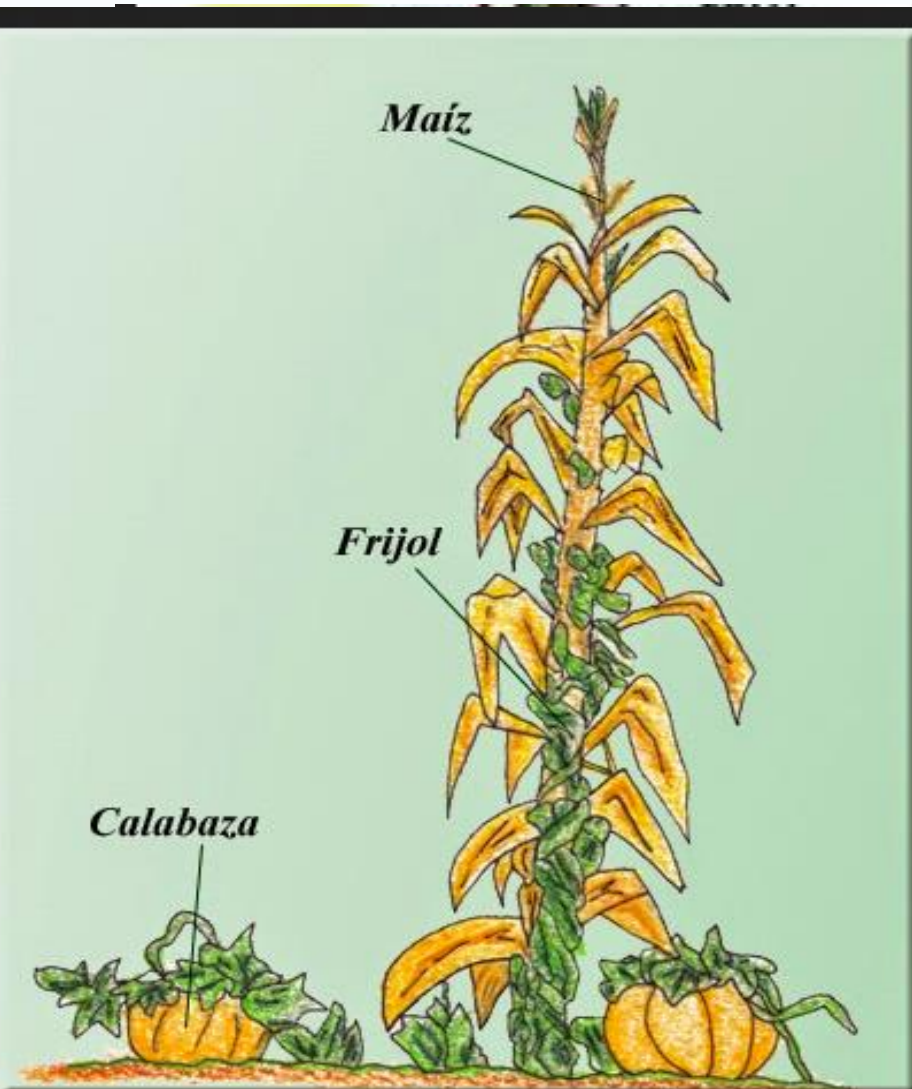
**Cities disappear --- cities arise...  
Cities change...**



# Chinampas – Aztec and pre-Aztec

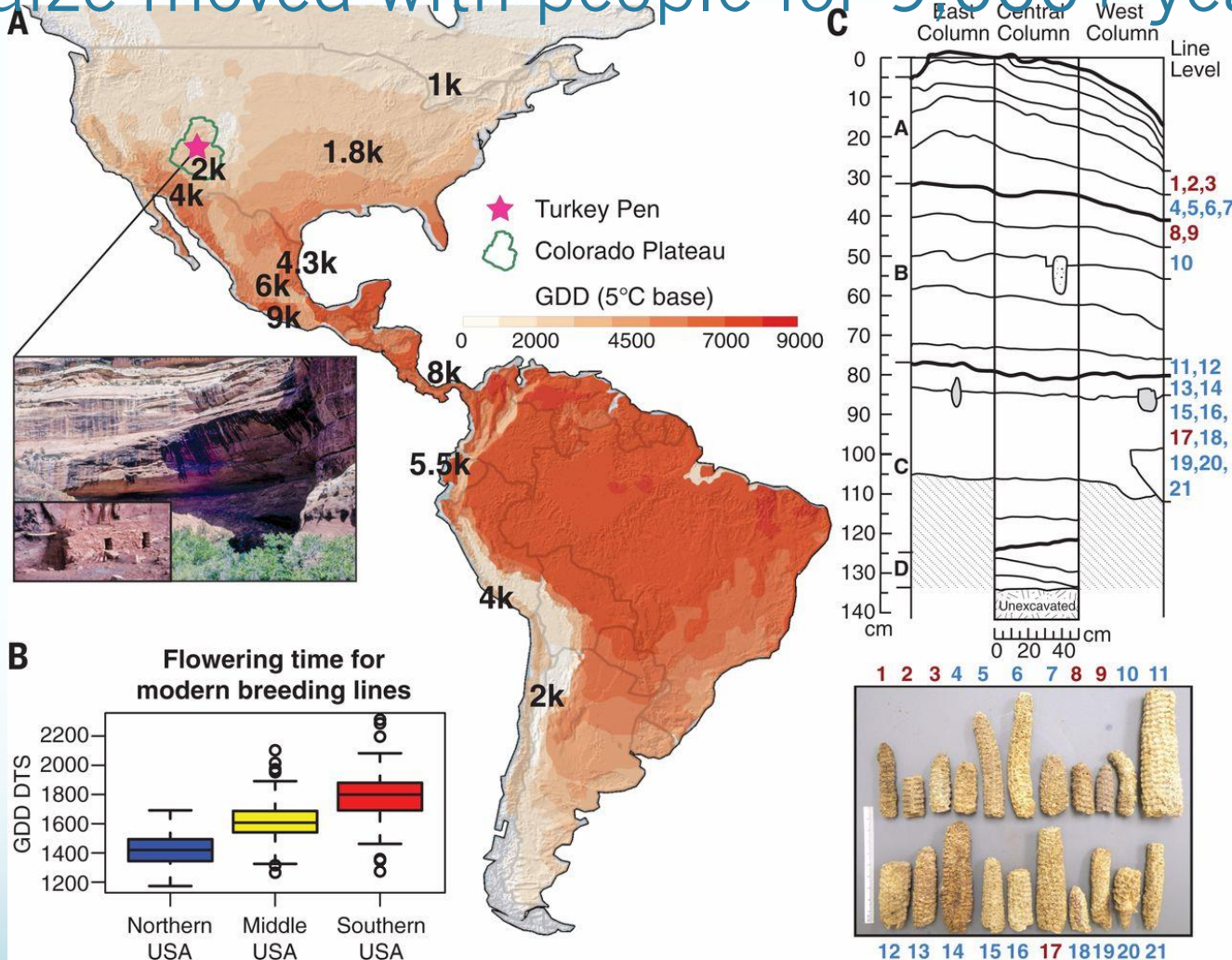


# Agronomy and Cuisine: *Biocultural Landscapes*



**Fig. 1**  
**Climatic**  
**and**  
**archaeological**  
**context**  
**of Turkey**  
**Pen**  
**Shelter**  
**(TPS).**

Maize moved with people for 9,000+ years



Kelly Swarts et al. *Science* 2017;357:512-515

# Monocultures and “Orphan Crops”





Richa Kumar, India's Green Revolution and Beyond  
Visioning Agrarian Futures on Selective Readings of  
Agrarian Pasts

Economic & Political Weekly EPW August 24, 2019 vol IIV no 34

Official description of Indian agriculture after Independence as backward and unable to feed its people

- Reality: India's food availability per capita increased from 144.1 kilograms (kg) per person per annum in 1951 to 171.1 kg per person per annum in 1961 --- in MILLET and LENTILS; wheat was included, but not other cultivated foods (meat, fish, eggs, greens) nor gathered foods (berries, roots, small game)

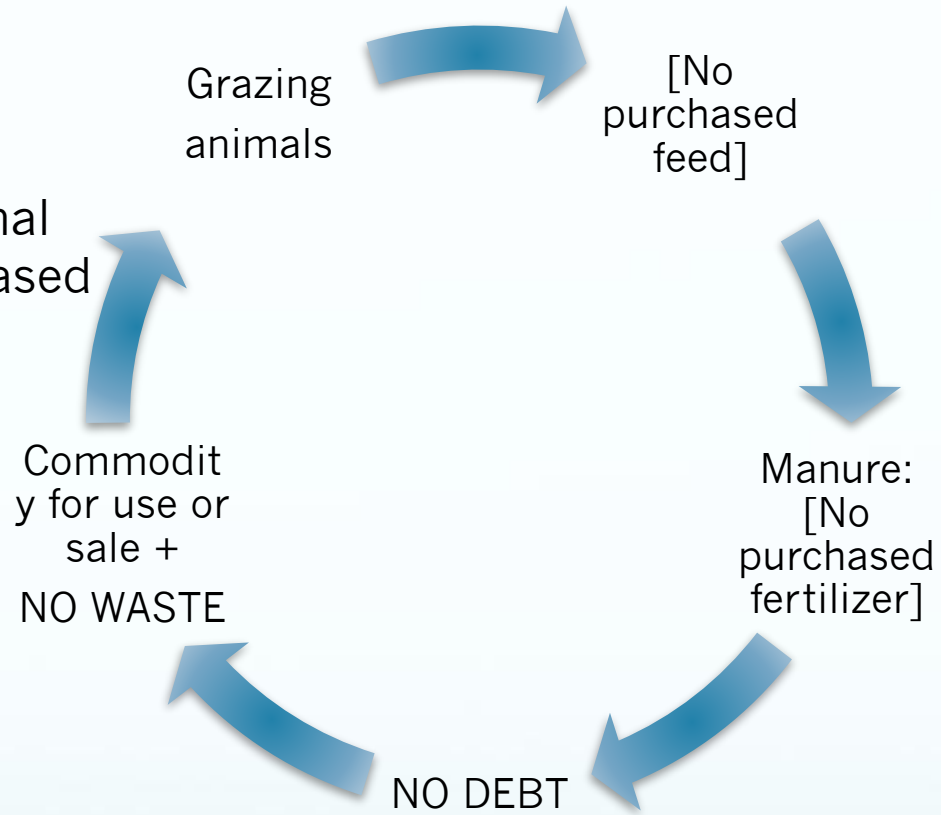
Official description justified huge food aid until 1965, and Green Revolution high-yielding WHEAT after

Diets became simplified as landscape was simplified, and food access was shifted to markets.

# What not to trust:

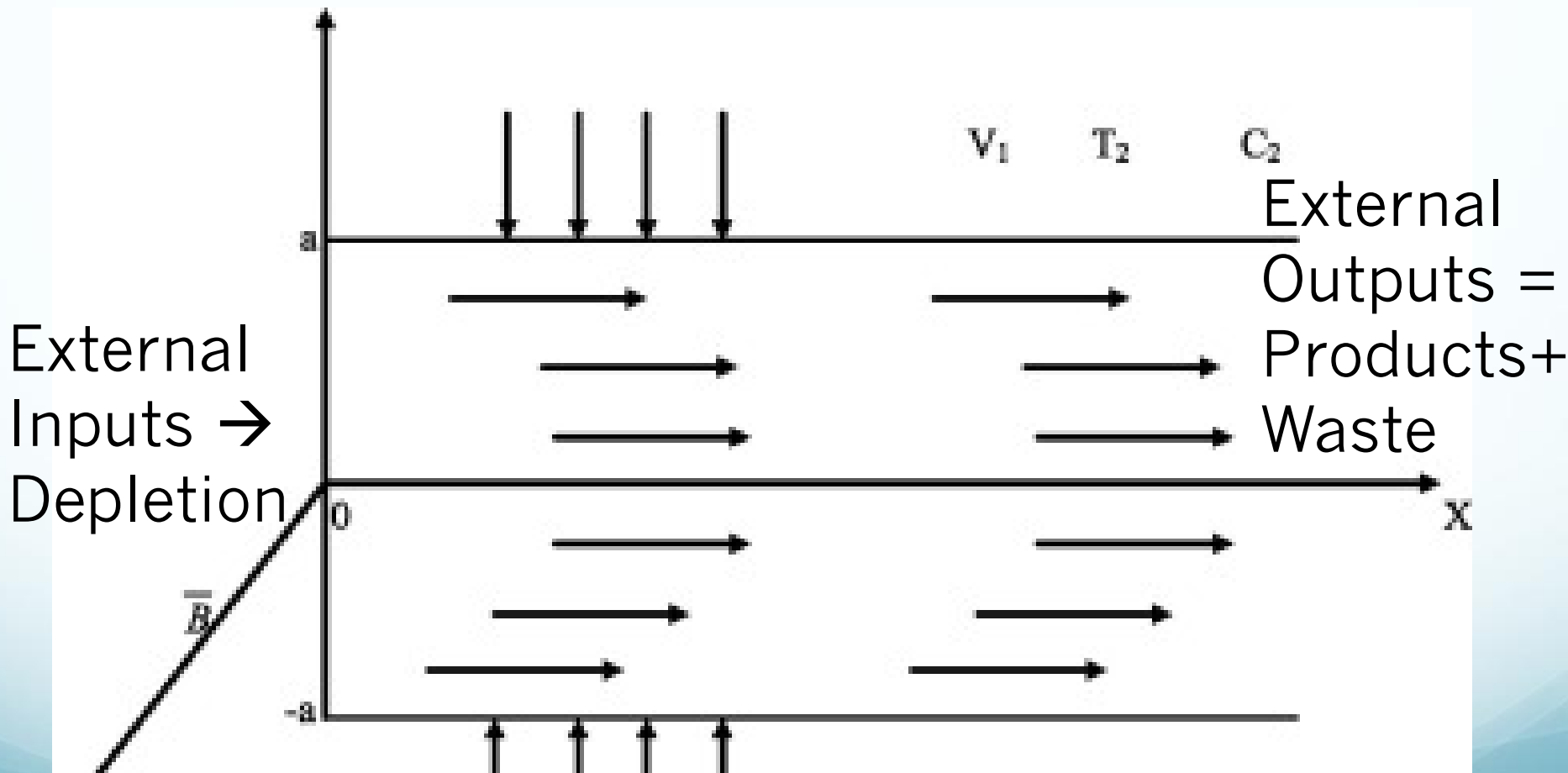
History Lessons told by power and shaped by linear ways of acting, measuring and thinking.

# We Know What to Do



UNEP, Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel. Paris: UNEP, 2016. Downloadable from: <https://europa.eu/capacity4dev/unep/document/unep-irp-report-food-systems-and-natural-resources>

# What We Need to Change: Industrial/Linear Logic



But there is no “away”:  
It is all here on earth



Potash Mine near Moab, Utah  
(NASA)



Landfill site in Poland (Wikipedia)

# The now nearly universal dependency



# Cover Crop: Multi-Functional Tools (MANAGEMENT TRADE-OFFS)

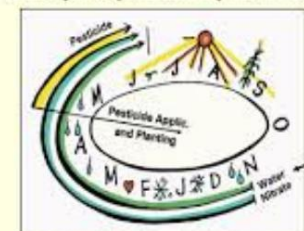
## Weed Control



## Nitrogen Fertility

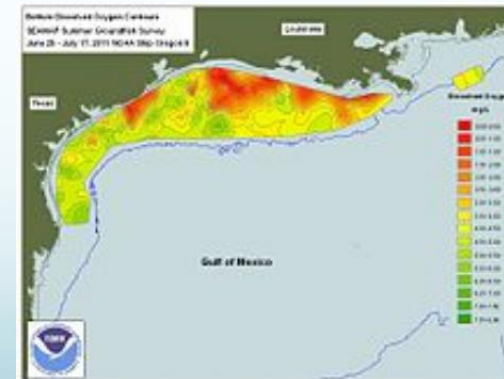


Less runoff



Majority of drainflow and N-loads occur in fallow season

Means less ocean death



Civil Rights  
And Independent  
Black Farms

# FREEDOM FARMERS



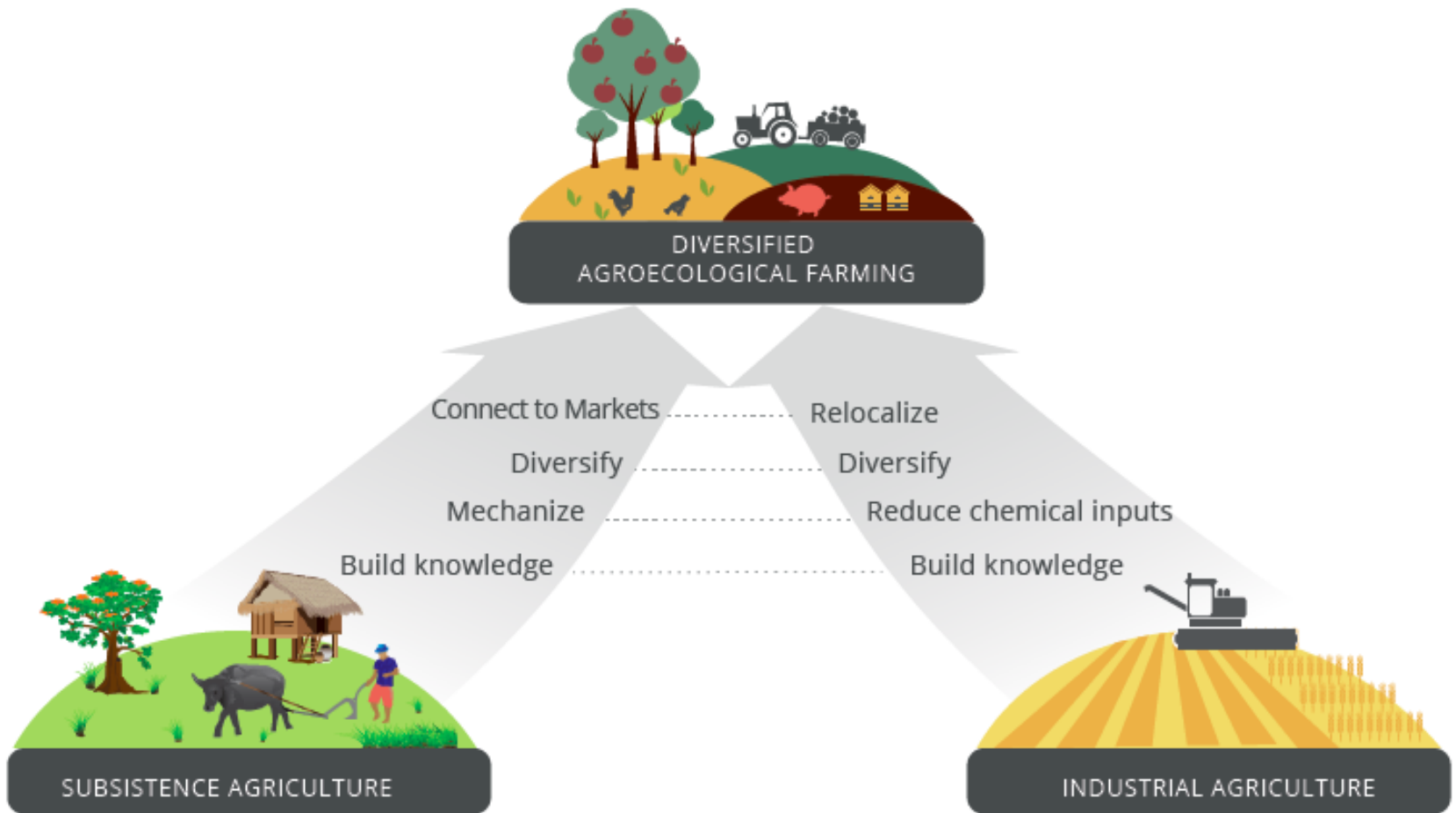
AGRICULTURAL RESISTANCE AND  
THE BLACK FREEDOM MOVEMENT

~~~~~ MONICA M. WHITE ~~~~~

Foreword by LaDonna Redmond, Founder of the Campaign for Food Justice Now



**FIGURE 2 - TRANSITIONING FROM DIFFERENT STARTING POINTS**



IPES-Food. 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. International Panel of Experts on Sustainable Food systems. [www.ipes-food.org](http://www.ipes-food.org)

# TECHNOSPHERE:

## How industrial technologies can be cyclical

### CRADLE TO CRADLE

“closed-loop systems in which every *output ingredient* is safe and beneficial

NO TOXIC MATERIALS USED OR PRODUCED

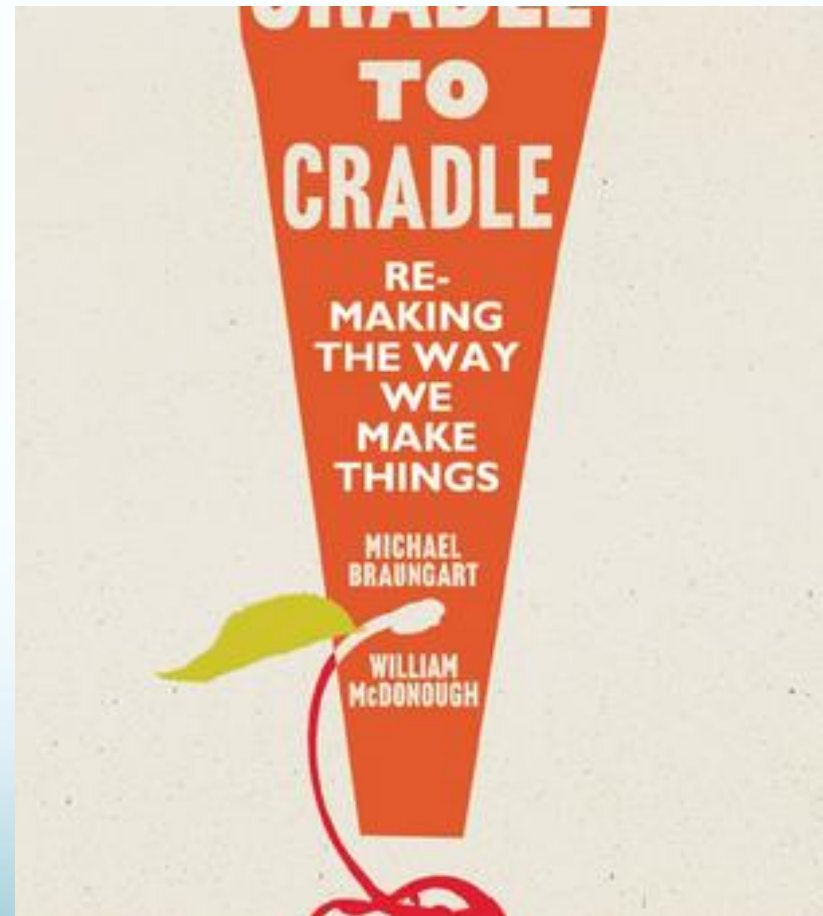
PRODUCTS DESIGNED TO LAST,

TO BE USED IN MULTIPLE STAGES,

FINALLY TO BE ABSORBED IN NATURE

WORKS AT ALL SCALES AT ONCE

→ NO “GRAVE” – NOTHING TO “LANDFILL”



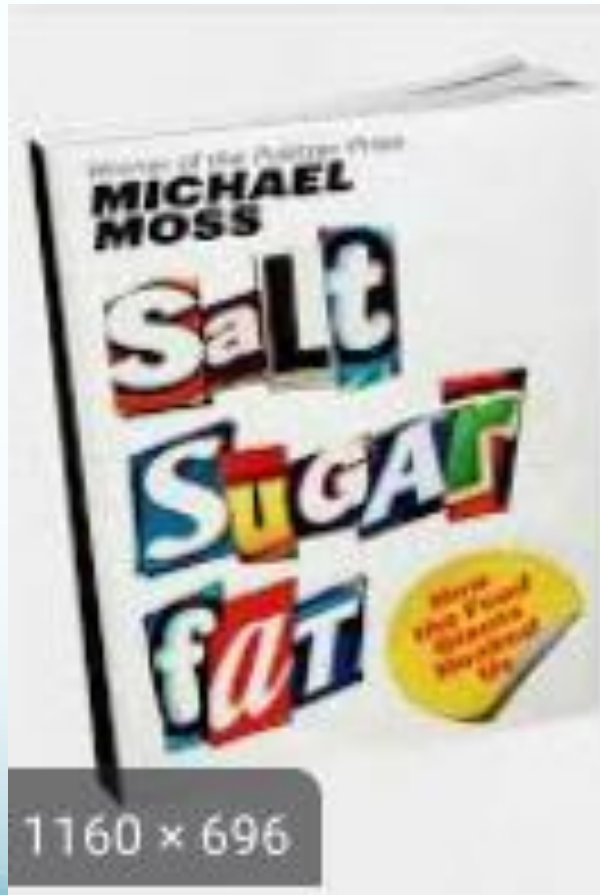
# We Know What to Do



UNEP, Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel. Paris: UNEP, 2016. Downloadable from: <https://europa.eu/capacity4dev/unep/document/unep-irp-report-food-systems-and-natural-resources>

# Breaking Addictions:

## 1. Food



*"Industrial foods are created to make the biggest profits possible and very skillfully make use of the phenomenon of addiction."*

*"This book provides strong examples that show how much control the food industry really has."*

Ernst Erb, diet-health.info

# Breaking Addictions:

## 2. Agriculture



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?

Farming Done By Natural

Principles can be

A Matrix for All

Ecosystems

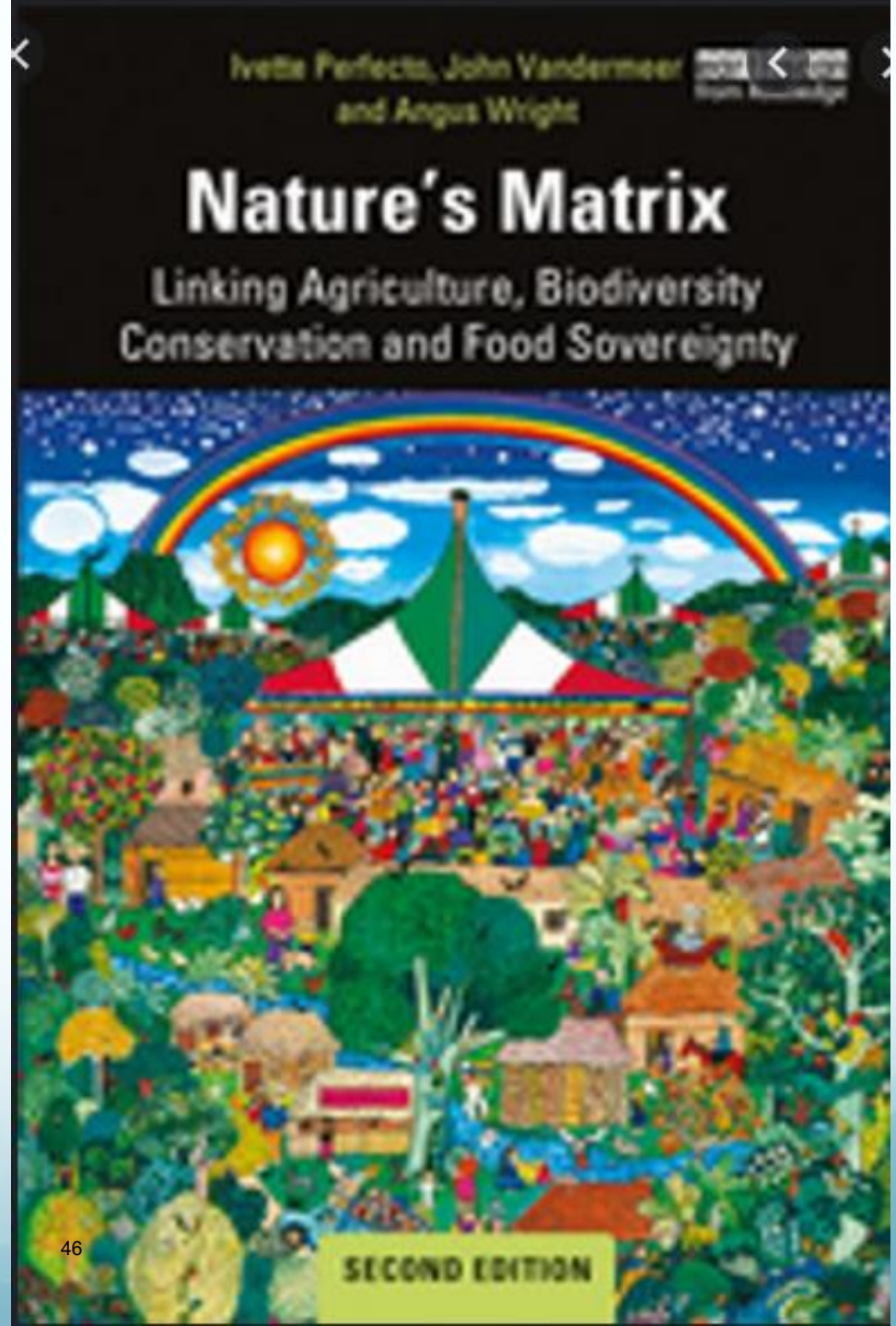
Humans can be both

A foodgetting species

AND

A responsible steward

of habitats



**Metabolism:** conversion of energy from outside an organism (or city or farm) into its life-sustaining processes

- mixed animal/plant/wild farming
- within, around, and (sometimes) far from cities
- grazing animals in large grasslands (recovered from soy and maize)
- integrating grains and root crops into mixed systems with diverse plants and animals
- use soil and water wisely
- adapting to change, always seeking balance

# Biocultural Landscape I

## Sites of Origin: Potatoes

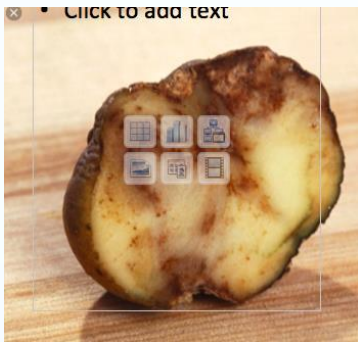




# Biocultural Landscape II: Metabolism of Introduced Crops

Doing it Badly: Ireland,  
1300-1845/49

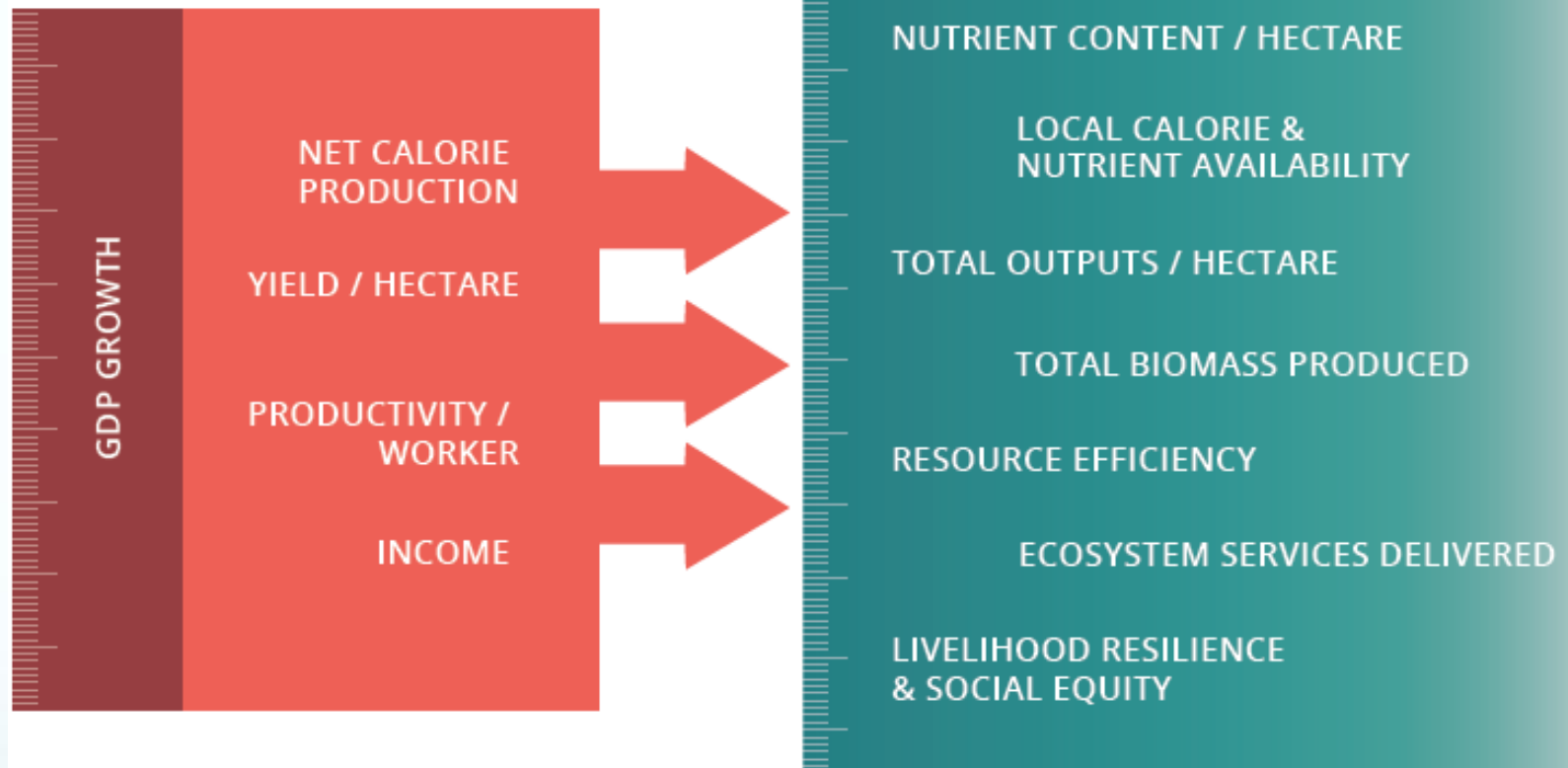
Doing It Well in France



Famine, the Great Hunger ...



FIGURE 15 - MEASURING WHAT MATTERS FOR SUSTAINABLE FOOD SYSTEMS



IPES-Food. 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. International Panel of Experts on Sustainable Food systems [www.ipes-food.org](http://www.ipes-food.org)

# We Know What to Do

To eat sustainably, we need regenerative farming

- Exit from one-dimensional thinking
  - No demon foods or saviour foods
  - No broken cycles
- Recover ancient universal principles for getting human food in relation to natural cycles
  - Relationality
  - Reciprocity
  - Balance



October 11 2019

# 1. OUR FOOD PROBLEM

**The rich world is eating unsustainably; LDCs catching up**

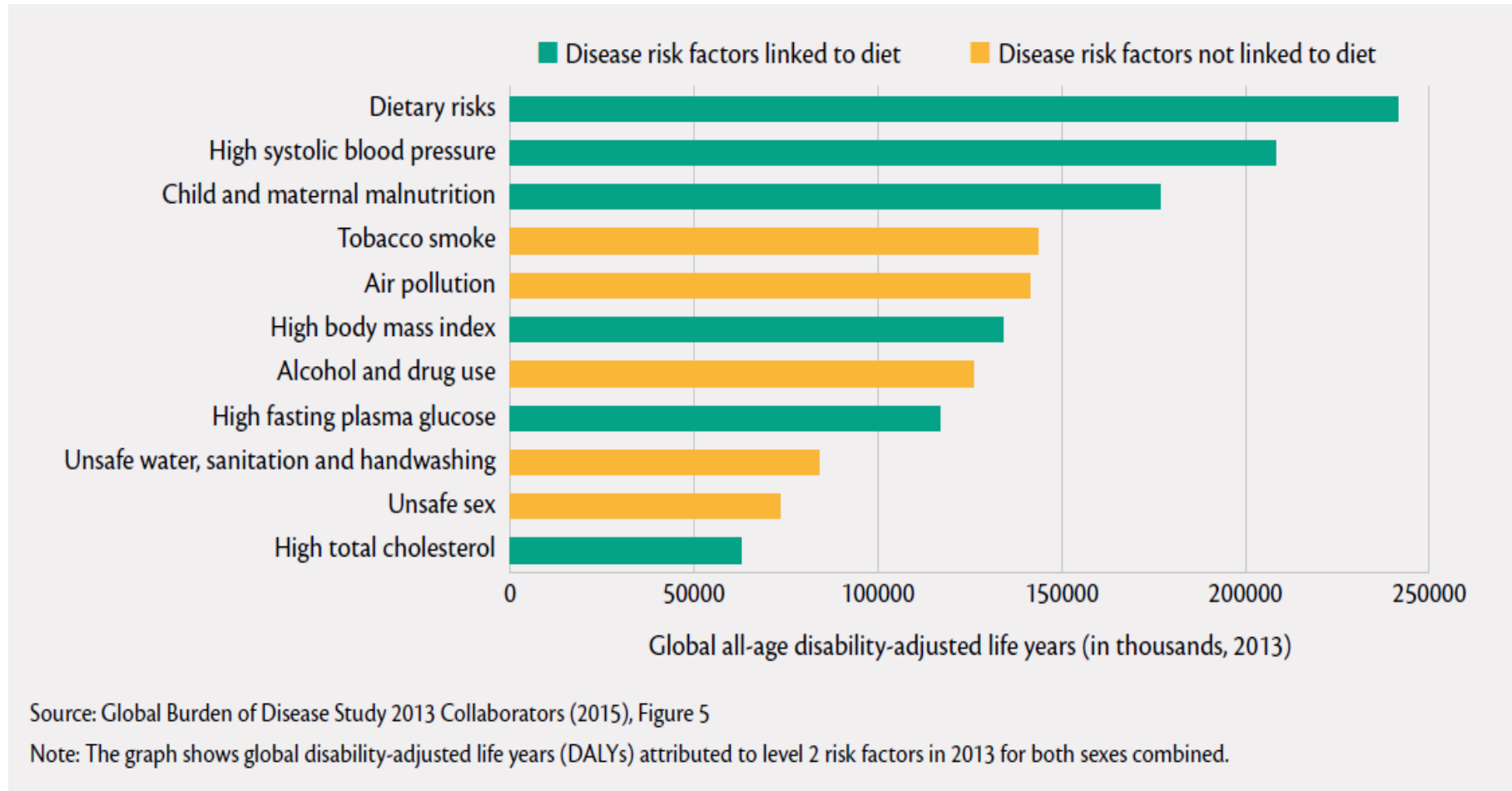
**Environment: CO<sub>2</sub>e, H<sub>2</sub>O, Biodiversity**

**Health: NCDs, safety, antibiotics**

**Economy: € \$ £, work, market concentration**

**Society: class, culture, values**

# Six of top 11 risk factors driving global burden of disease are related to diet



Source: Lancet 2015 summarised in GLOPAN (2016) <http://glopan.org/sites/default/files/ForesightReport.pdf>

# Global/regional realities compared to 'healthy' diet ideal

Source: Berners-Lee et al 2018

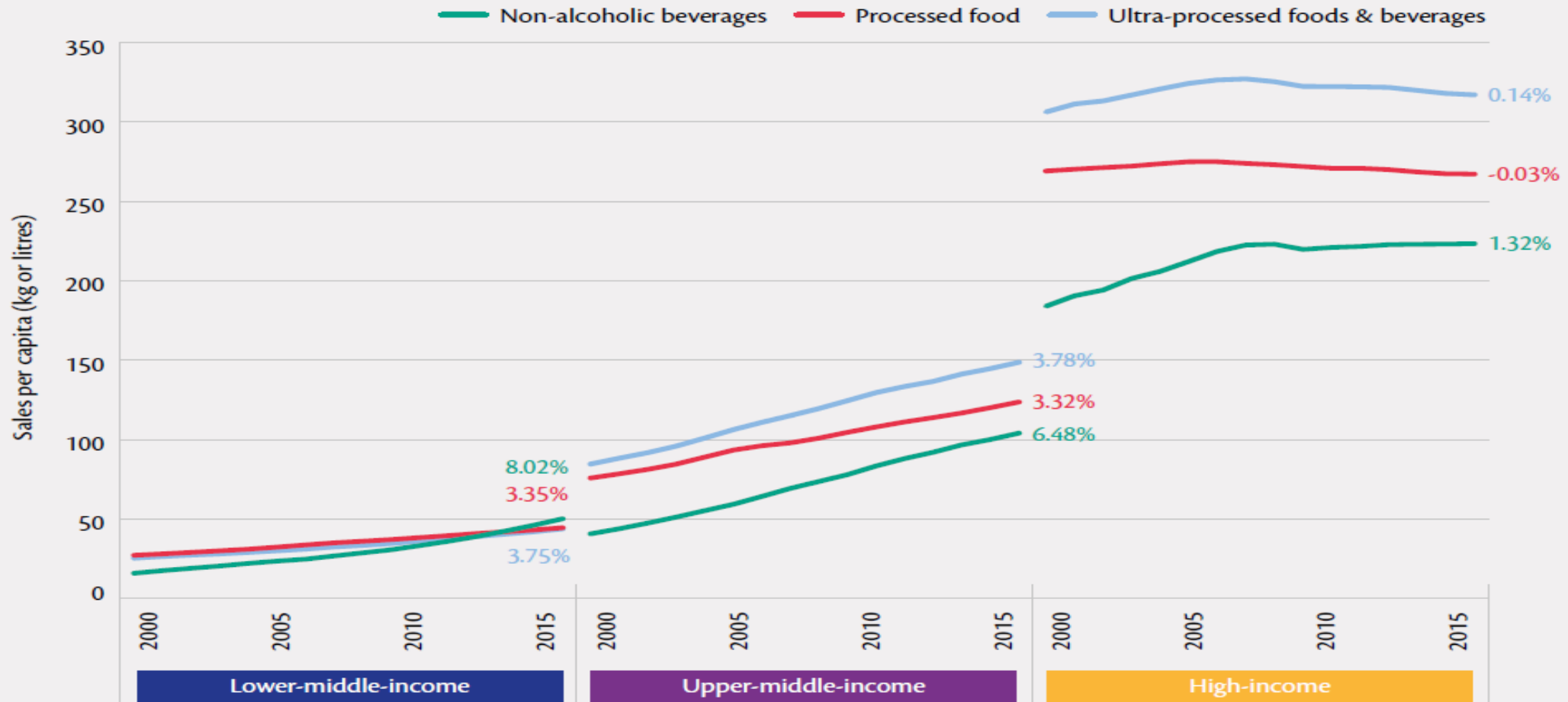
| Food type               | Healthy diet<br>(kcal/p/<br>day) | Current (2013) global and regional consumption (kcal/p/day) |                          |                               |                          |                  |                                |                                         |                           |
|-------------------------|----------------------------------|-------------------------------------------------------------|--------------------------|-------------------------------|--------------------------|------------------|--------------------------------|-----------------------------------------|---------------------------|
|                         |                                  | World                                                       | Industrial-<br>ised Asia | North<br>America &<br>Oceania | Europe<br>inc.<br>Russia | Latin<br>America | South &<br>South-<br>east Asia | North Africa,<br>West &<br>Central Asia | Sub-<br>Saharan<br>Africa |
| Fruit and<br>vegetables | 255<br>(minimum)                 | 159 <sup>b</sup>                                            | 294                      | 129 <sup>b</sup>              | 142 <sup>b</sup>         | 112 <sup>b</sup> | 82 <sup>b</sup>                | 154 <sup>b</sup>                        | 193 <sup>a</sup>          |
| Sugar and<br>sweeteners | 150<br>(maximum)                 | 189 <sup>a</sup>                                            | 68                       | 383 <sup>b</sup>              | 264 <sup>b</sup>         | 297 <sup>b</sup> | 195 <sup>a</sup>               | 214 <sup>b</sup>                        | 153 <sup>a</sup>          |
| Vegetable<br>oils       | 360<br>(maximum)                 | 219                                                         | 179                      | 626 <sup>b</sup>              | 359                      | 296              | 116                            | 304                                     | 173                       |
| Meat, dairy<br>and fish | 624<br>(maximum)                 | 499                                                         | 624                      | 1059 <sup>b</sup>             | 1035 <sup>b</sup>        | 637 <sup>a</sup> | 257                            | 404                                     | 170                       |



# The nutrition transition

Source: Baker 2016 in GLOPAN 2016 p51

**FIGURE 3.6: Trends in per capita sales volumes of non-alcoholic beverages, processed foods and ultra-processed foods by country income group, 2000–15, with 15-year average growth rates shown**

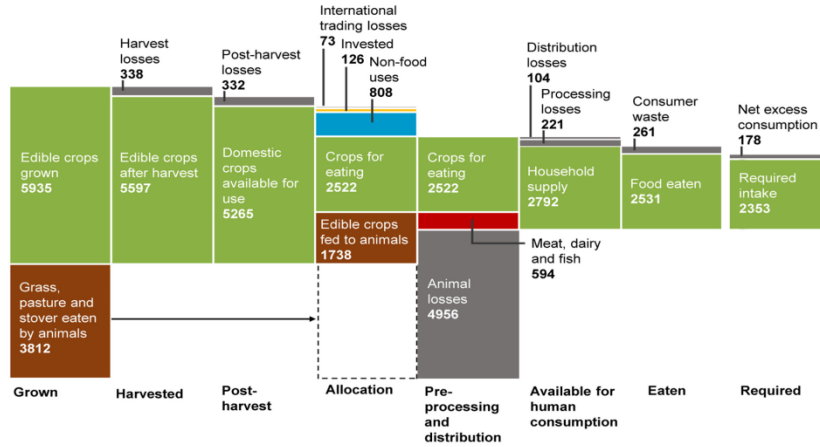


Source: Baker (2016)

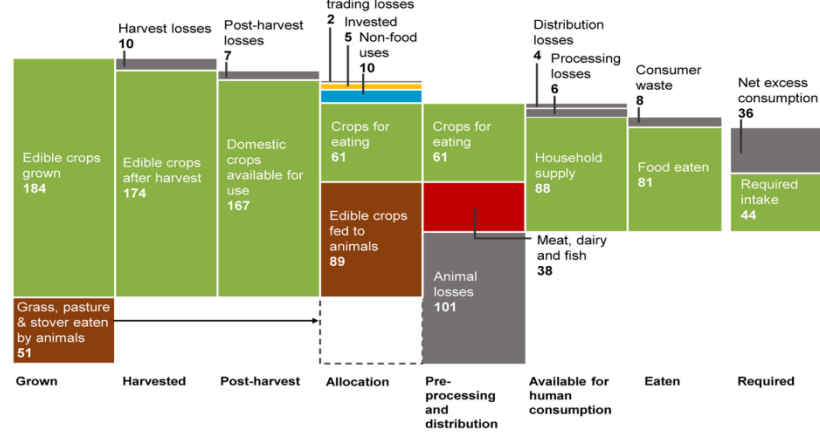
# Food chains lose nutrients

## Berners-Lee et al (2018)

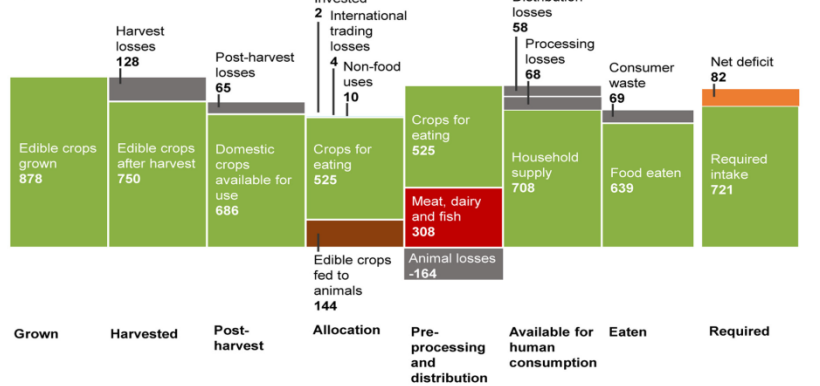
a) Global food energy flow



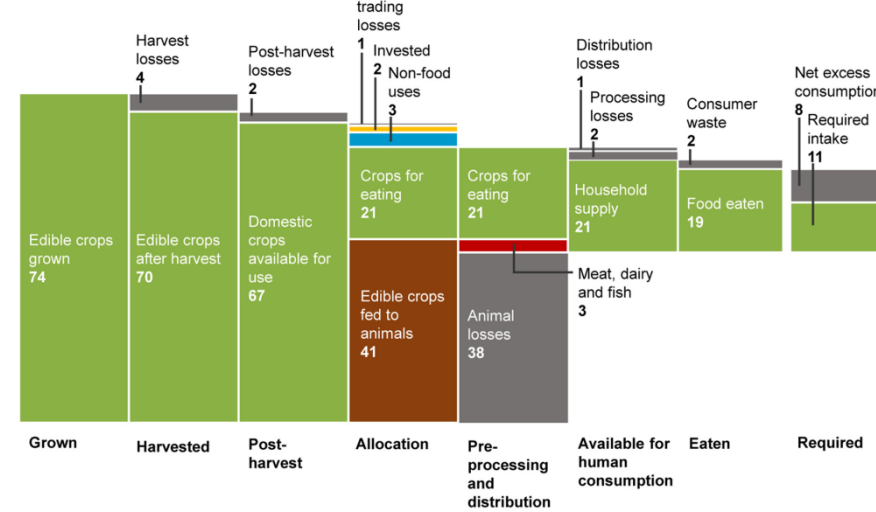
b) Global food protein flow



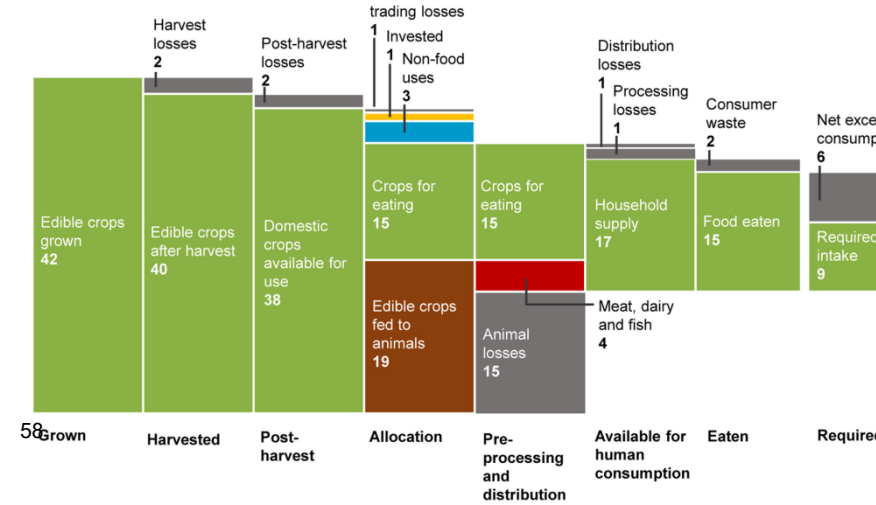
c) Global food vitamin A flow



d) Global food iron flow



e) Global food zinc flow



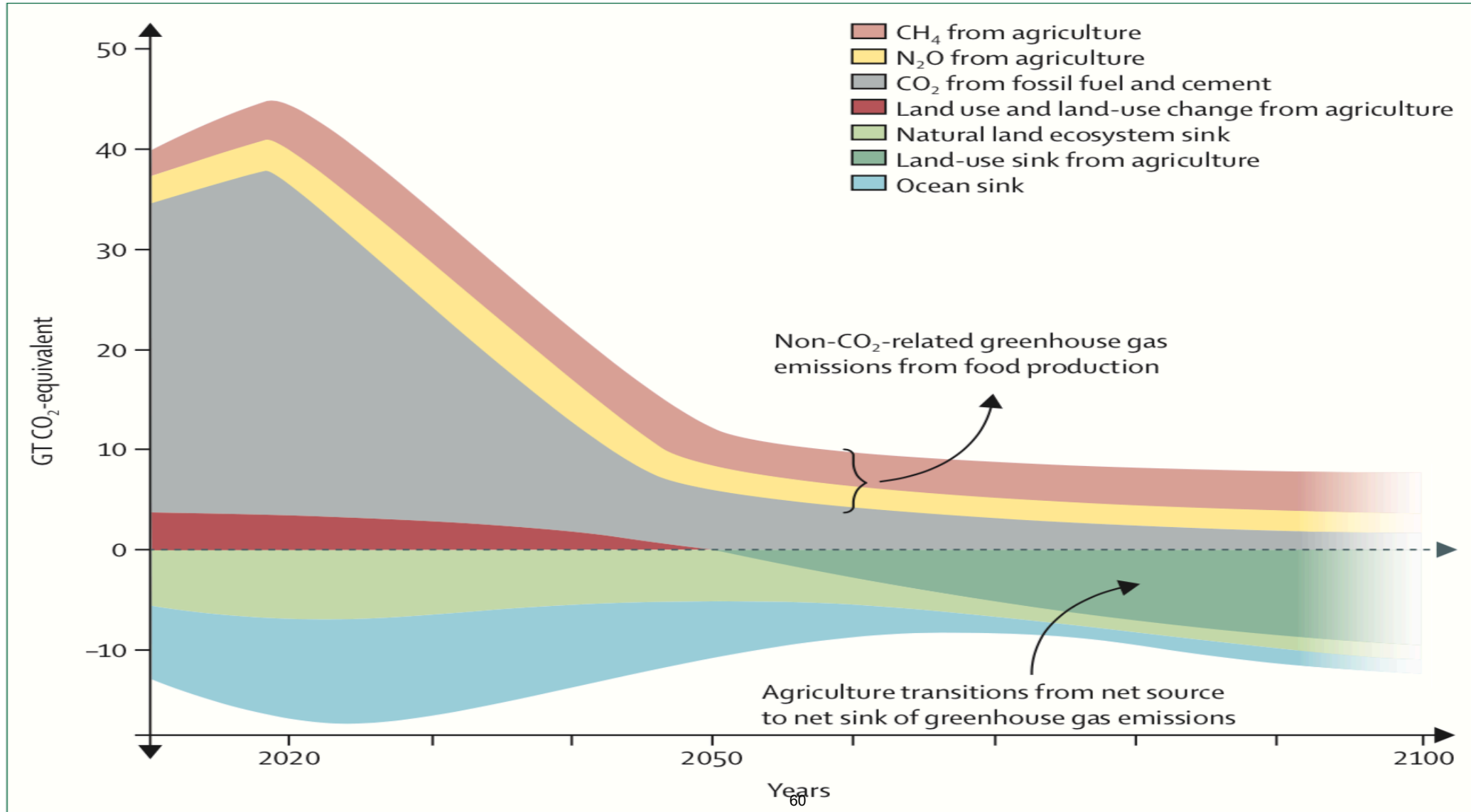
# Global health costs estimated

Harvard & WEF (2011) [www.weforum.org/EconomicsOfNCD](http://www.weforum.org/EconomicsOfNCD)

- 2010-30 NCDs estimated to cost US **\$30 trillion+**
  - = 48% of global GDP in 2010
  - will push millions of people below poverty line
- CVD set to rise 2010-2030 globally by 22%
  - costing US\$ 20,032 bn over 2010-30
- Diabetes cost to global economy set to rise from \$500 bn (2010) to \$745 bn (2030)
- Higher impact will be in lower & middle income countries than in high income countries
  - = the effect of the Nutrition Transition
  - But can even rich countries can afford health care?

# Food Production if Safe Operating Space for Climate

Source: EAT-Lancet Commission report 'Food in the Anthropocene', *The Lancet*, January 2019

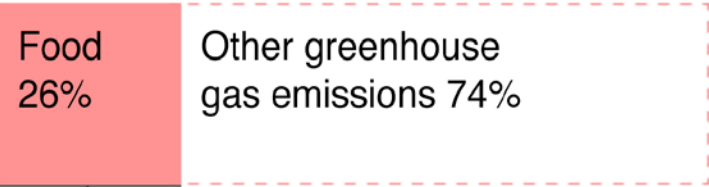


# Food's greenhouse gas effect

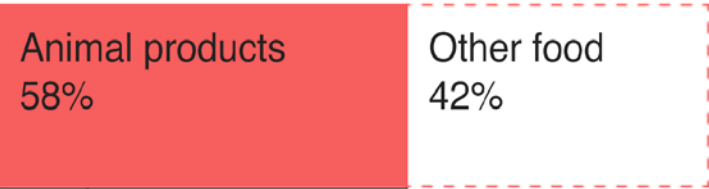
## How much impact does food have?

Proportion of total greenhouse gas emissions from food

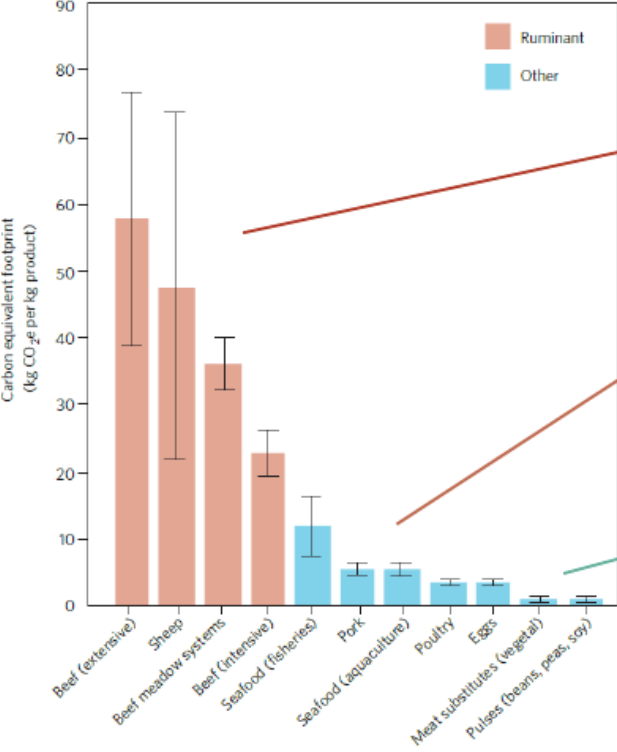
A quarter of global emissions come from **food**



More than half of food emissions come from **animal products**



Half of all farmed animal emissions come from **beef and lamb**



Ruminants have highest GHG per KG of product

Pork, poultry and seafood are lower than ruminant meats (beef and sheep)

Fruit, vegetables and grains are generally similar to meat substitutes and pulses

Source: Ripple et al (2014) *Nature Climate Change*, amended by FCRN

# Eating genetic diversity is in decline

- 391,000 known plant species, 5,538 are known to have been used as human food \*
- 3 crop species – rice, wheat and maize – provide 50% of the world's calories from plants.
- 146 country study found 103 species gave 90% of world's plant food supply\*\*
- Gene pool decline also within individ crops: FAO est c 75% genetic diversity of agric crops lost in C20th \*\*\*
- RAFI survey of 75 US crop species found 97% varieties listed in old USDA catalogues now extinct \*\*\*\*
- Studies in Germany found c 90% historical diversity of crops has been lost & S Italy c 75% crop varieties gone \*\*\*\*\*

## SOURCES:

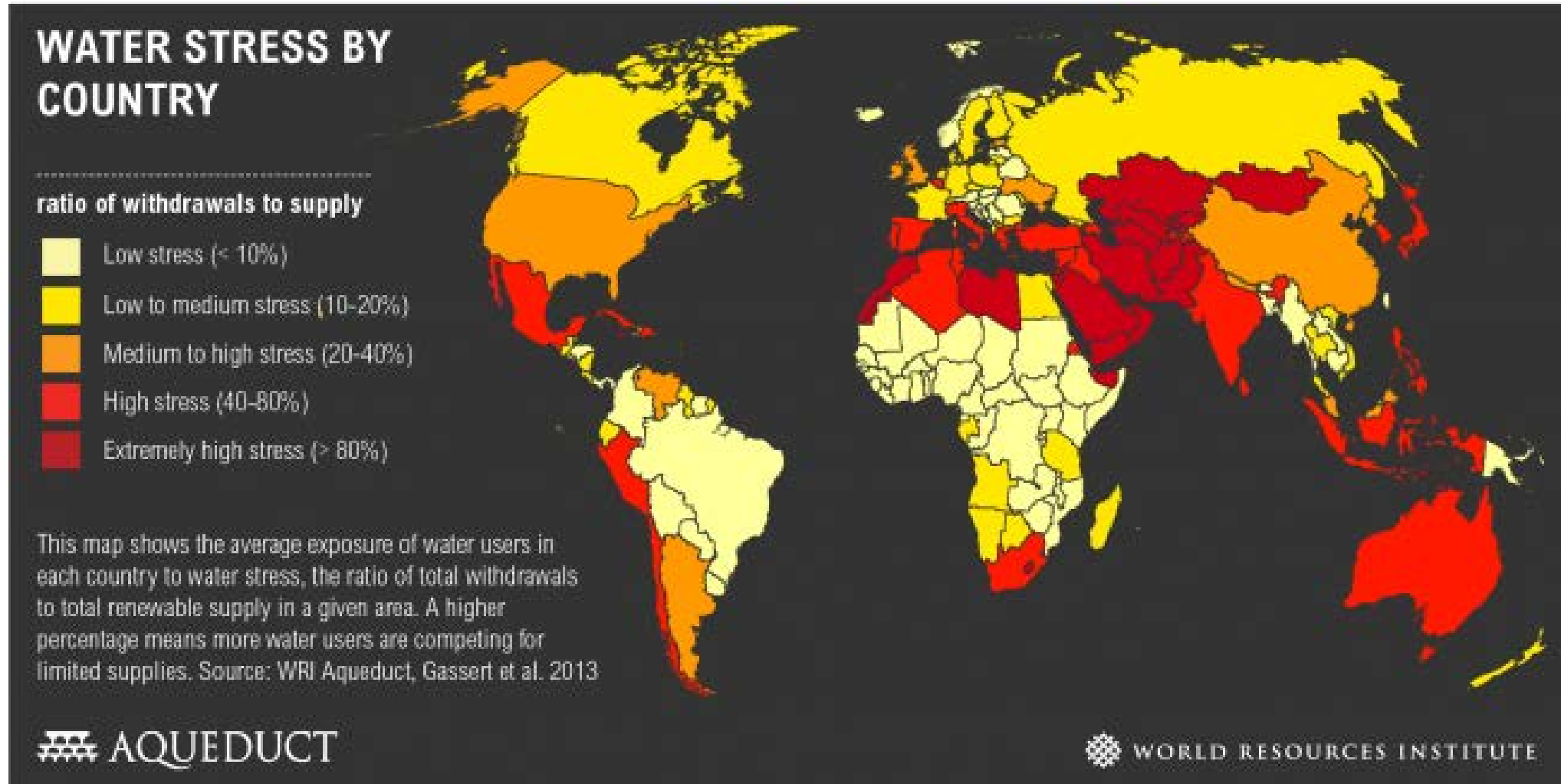
\* Bioversity: [https://www.bioversityinternational.org/fileadmin/user\\_upload/research/research\\_portfolio/Diet\\_diversity/Bioversity\\_International\\_Dietary\\_Diversity.pdf](https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/Diet_diversity/Bioversity_International_Dietary_Diversity.pdf)

\*\* Prescott-Allen, R and C Prescott-Allen (1990); How Many Plants Feed the World?, *Conservation Biology*, 4:4, 365-374

\*\*\* FAO (1998) *Special: Biodiversity for Food and Agriculture*, Rome <http://www.fao.org/sd/EPdirect/EPRe0039.htm>

\*\*\*\* Fowler C, Mooney P(1990); *The Threatened Gene* Lutworth Press

\*\*\*\*\*Hammer K, T Gladis & A Diederichsen (2002); In situ and on-farm management of plant genetic resources, *Europ. J. Agronomy* 19, 509-517



15,340 l CROP WATER



One 150 gram burger =  
2400 litres of embedded water



1 COW



200 kg BEEF

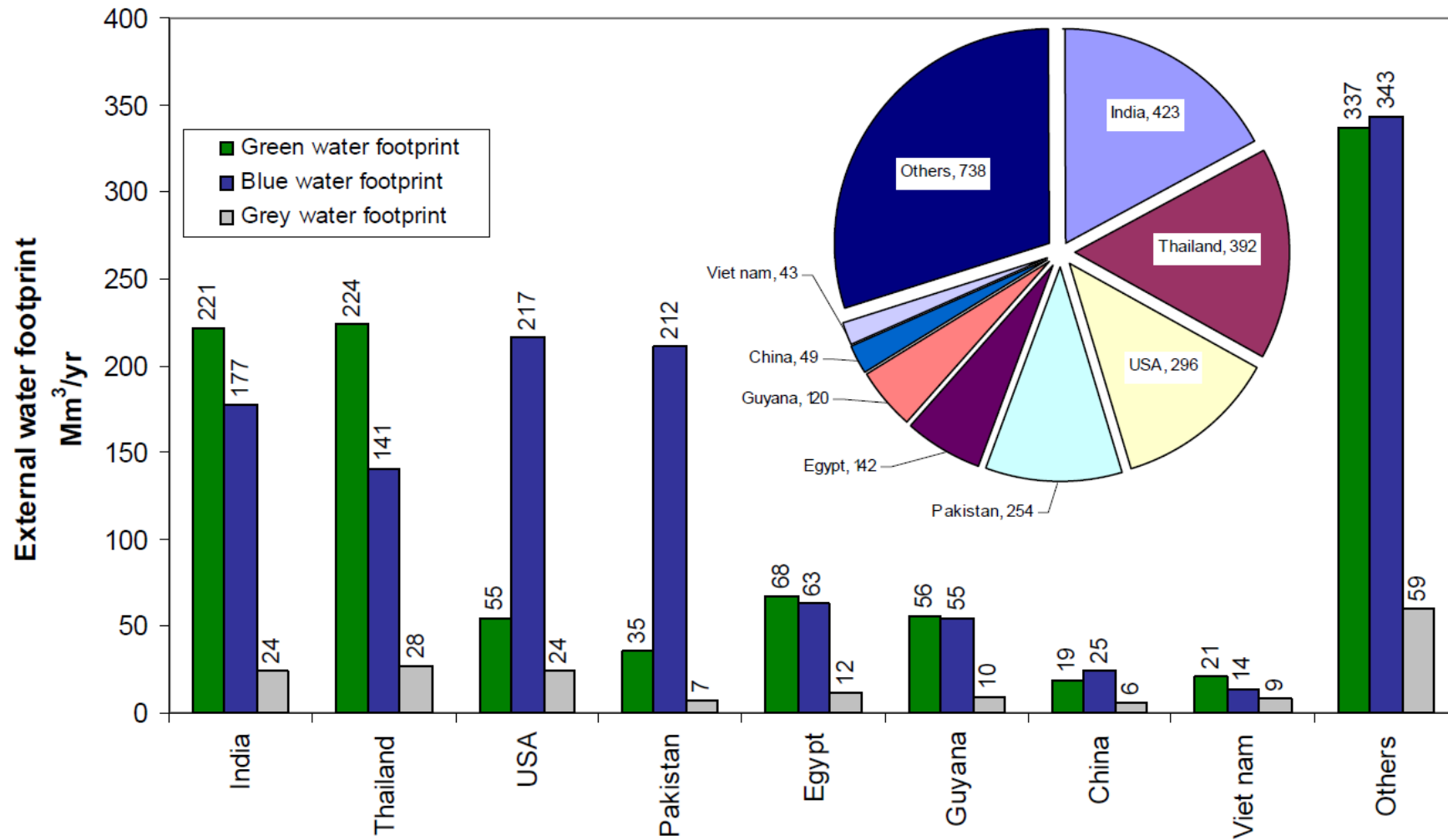


2400 l in one BURGER



# Importation of water to EU in the form of rice (average of EU 27)

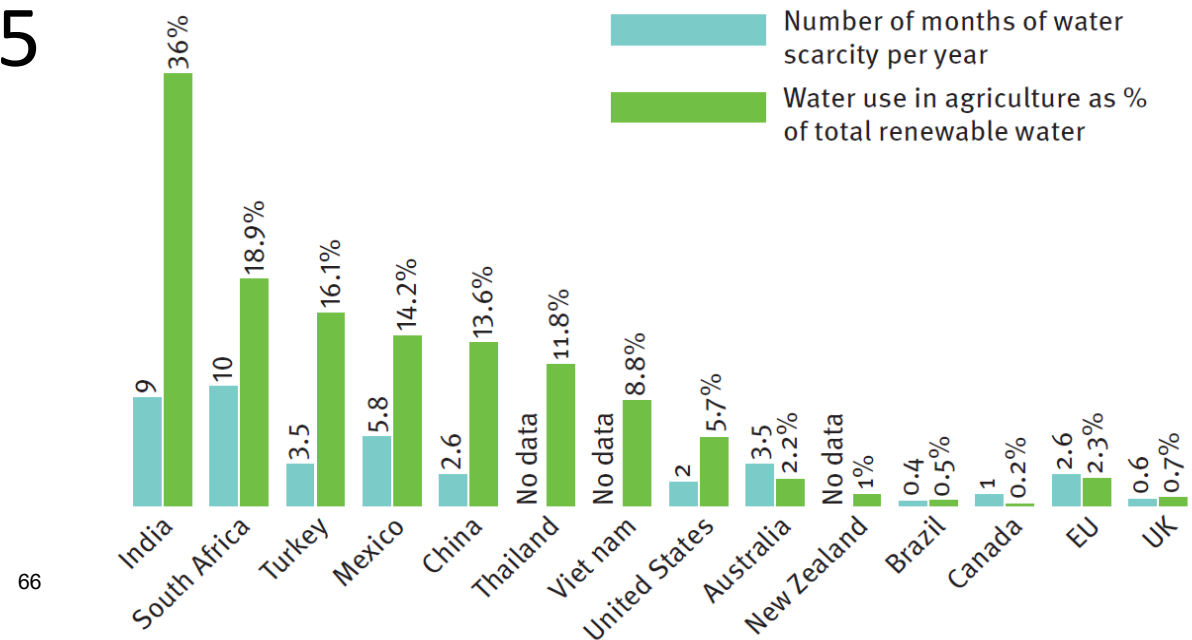
source: Chapagain & Hoekstra UNESCO-IHE (2010) pg 29



# UK Water Importation in fruit & veg

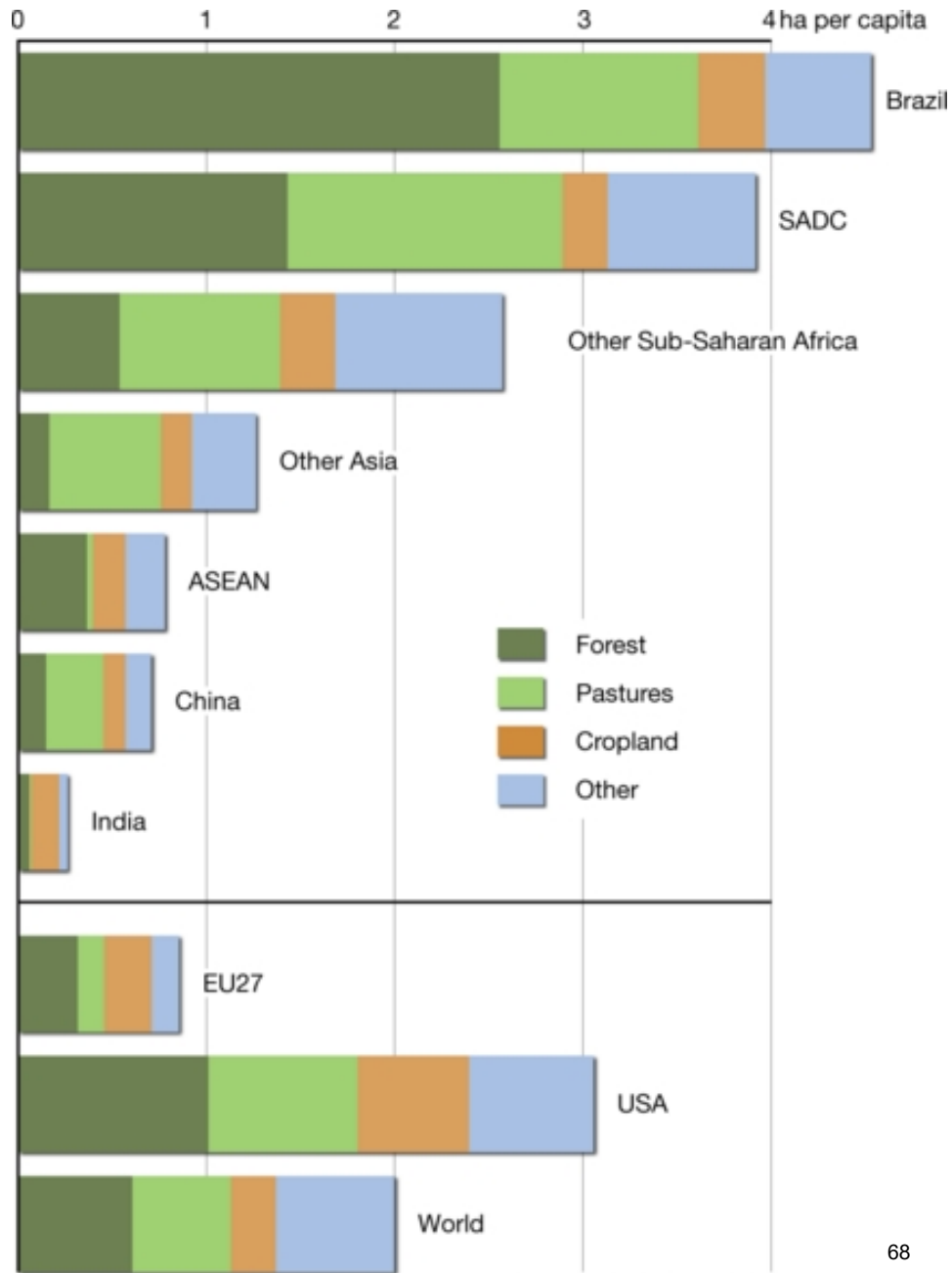
source: Hess & Sutcliffe, Cranfield University, 2018

- UK imports 13.5 bn kg of fresh fruit & veg p.a.
- = 560 million m<sup>3</sup> of freshwater p.a.
- = 211 kg/capita/year
- 74% of this is from countries with water vulnerabilities
- **increased by 36% in 1996 – 2015**



## **2. THE SUSTAINABLE DIETS CHALLENGE**

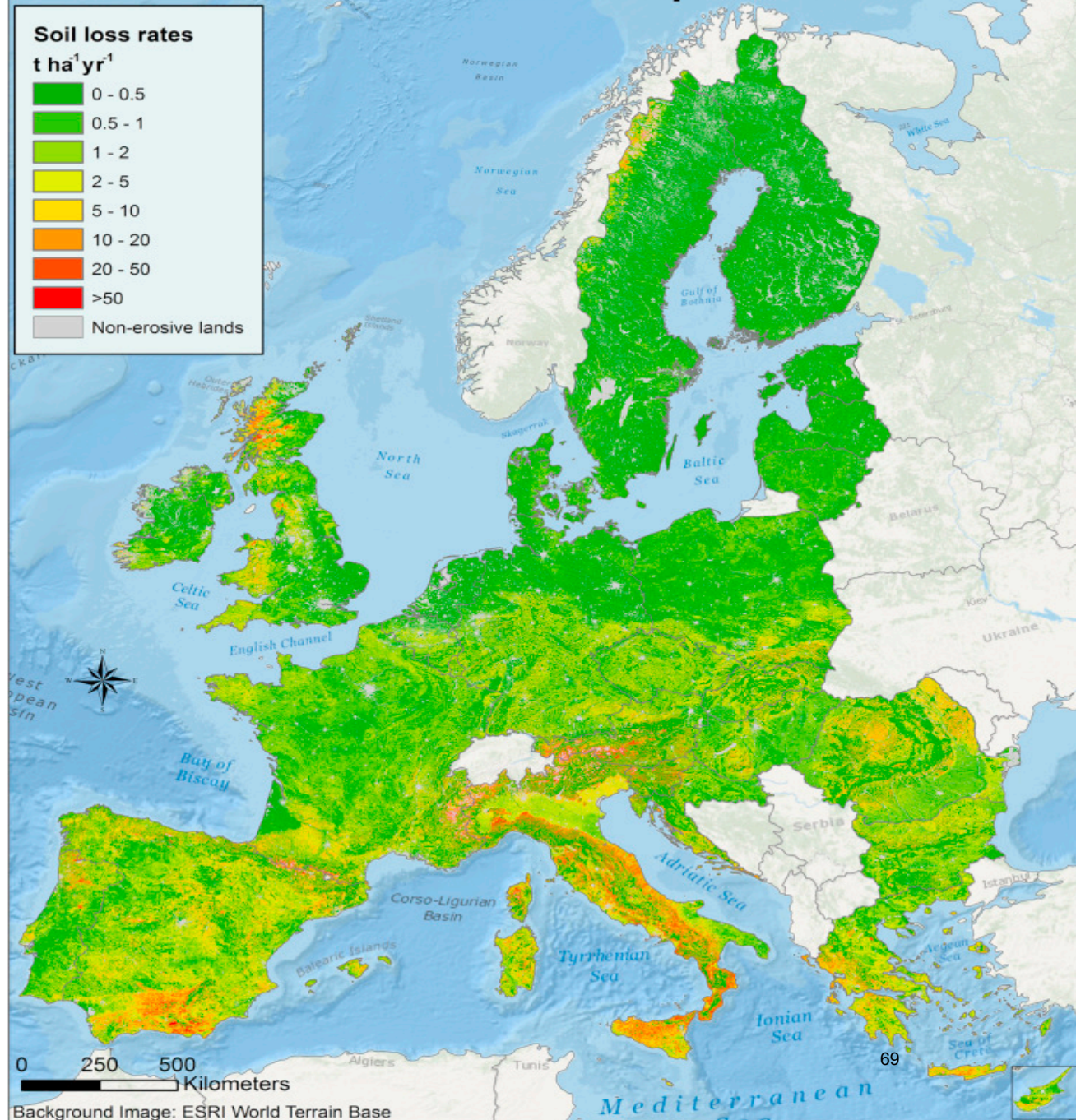
**Sustainable Diets = 'multi-criteria' approach to food**



# Land use by type, hectares per capita, by region

Source: FAOSTAT in:  
 UNEP GRID Arendal  
[http://www.grida.no/graphicslib/detail/the-development-potential-available-land-per-capita-in-land-use-class\\_1068](http://www.grida.no/graphicslib/detail/the-development-potential-available-land-per-capita-in-land-use-class_1068)

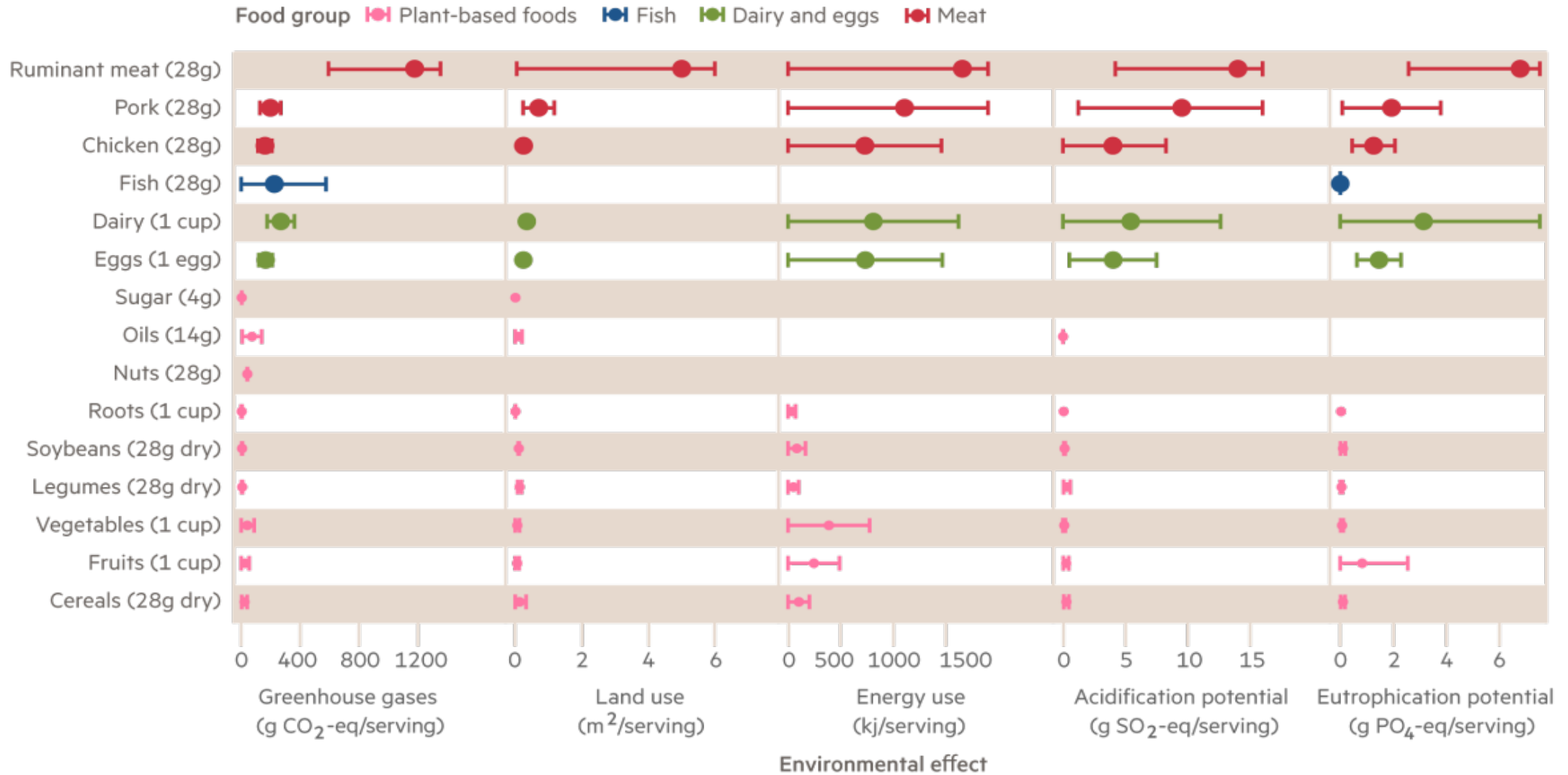
# Soil loss in the European Union



## Soil loss in the EU

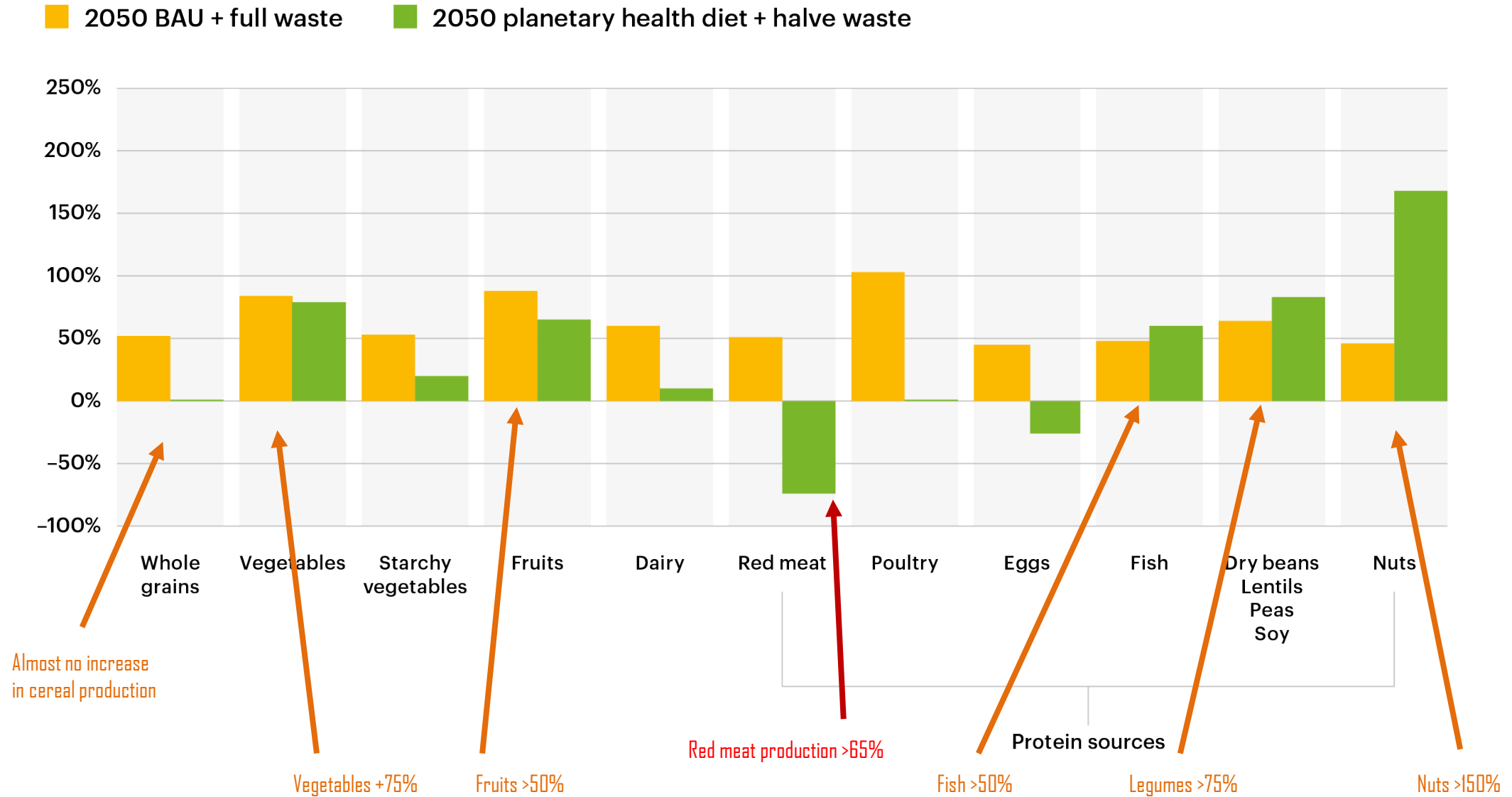
source: Panagos et al (2015)

# Environmental effects per serving of food produced



Source: The Lancet Commission  
© FT

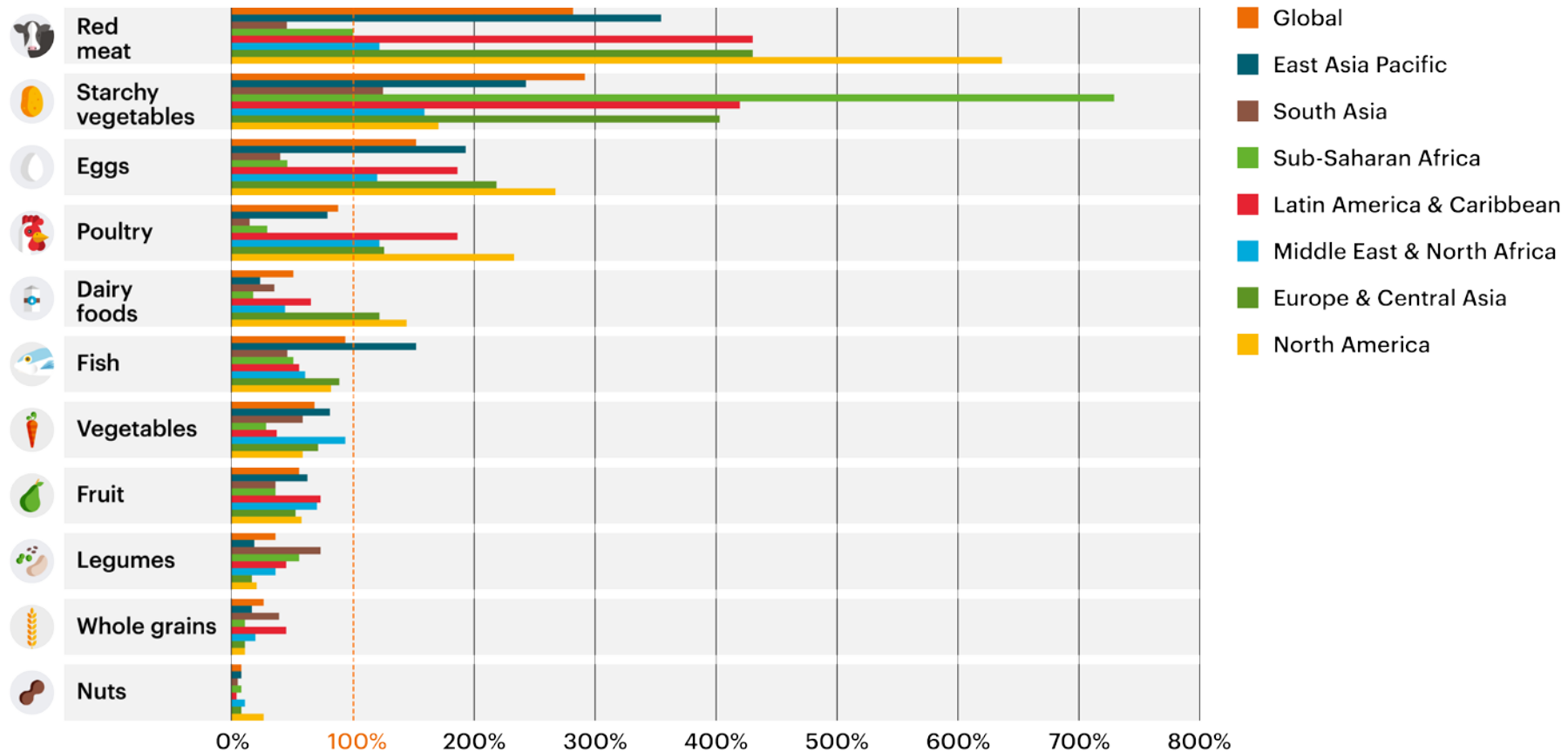
# Change in Food Production / Land Use



Source: EAT-Lancet Commission report 'Food in the Anthropocene', *The Lancet*, January 2019

# Current Intakes vs Planetary Health Diet

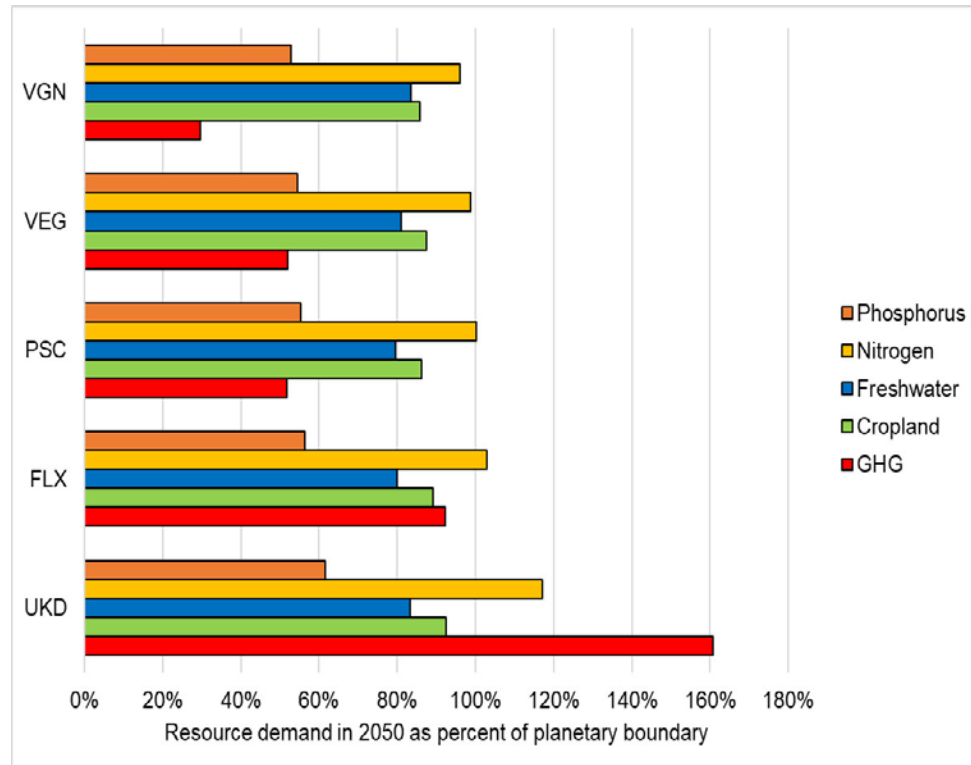
Source: EAT-Lancet Commission report 'Food in the Anthropocene', *The Lancet*, January 2019



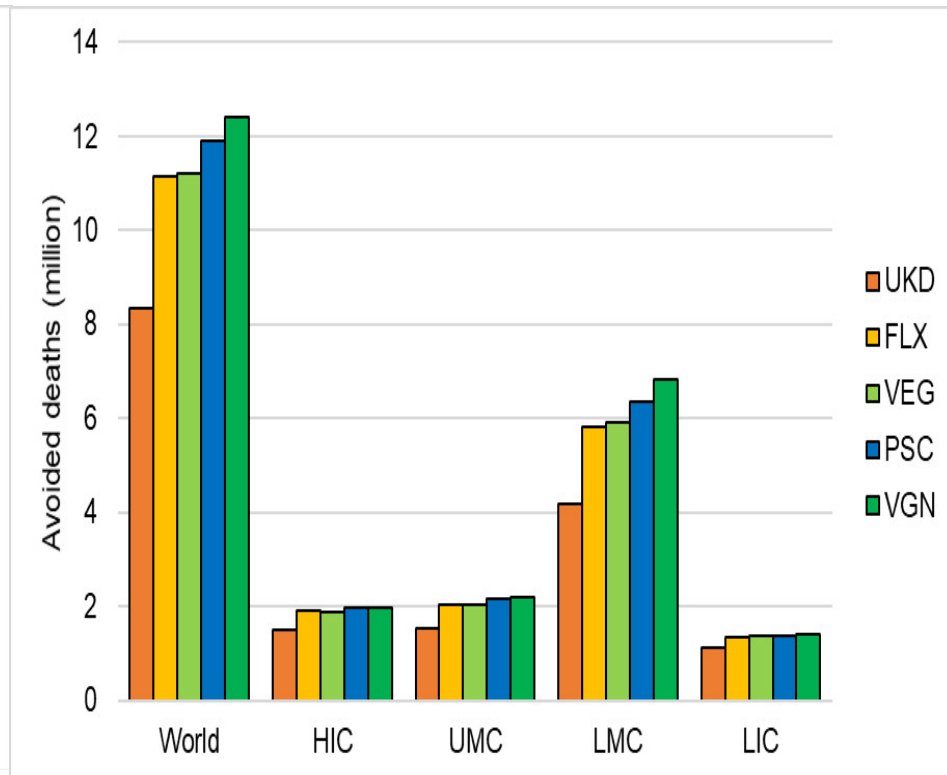


# What if everyone ate according to dietary guidelines?

Resource use as % of planetary boundary

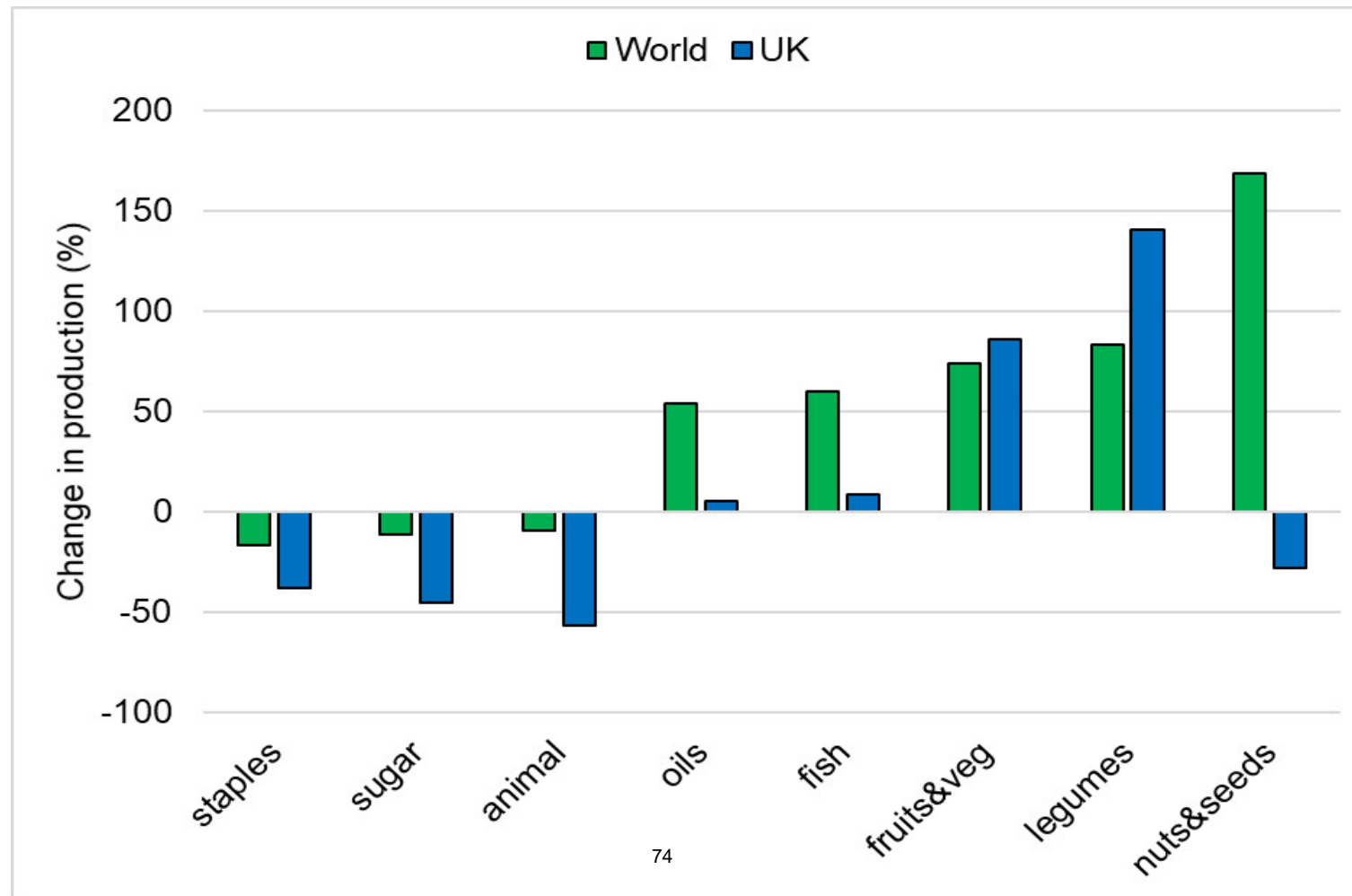


Avoided deaths, millions, by economy



Source: EAT-Lancet Commission report 'Food in the Anthropocene', *The Lancet*, January 2019

# Implications for change in production, Flexitarian diet, world / UK



Source:  
Springmann 2019  
for FFCC, based on  
EAT-Lancet  
Commission

### **3. WHO IS IN CONTROL?**

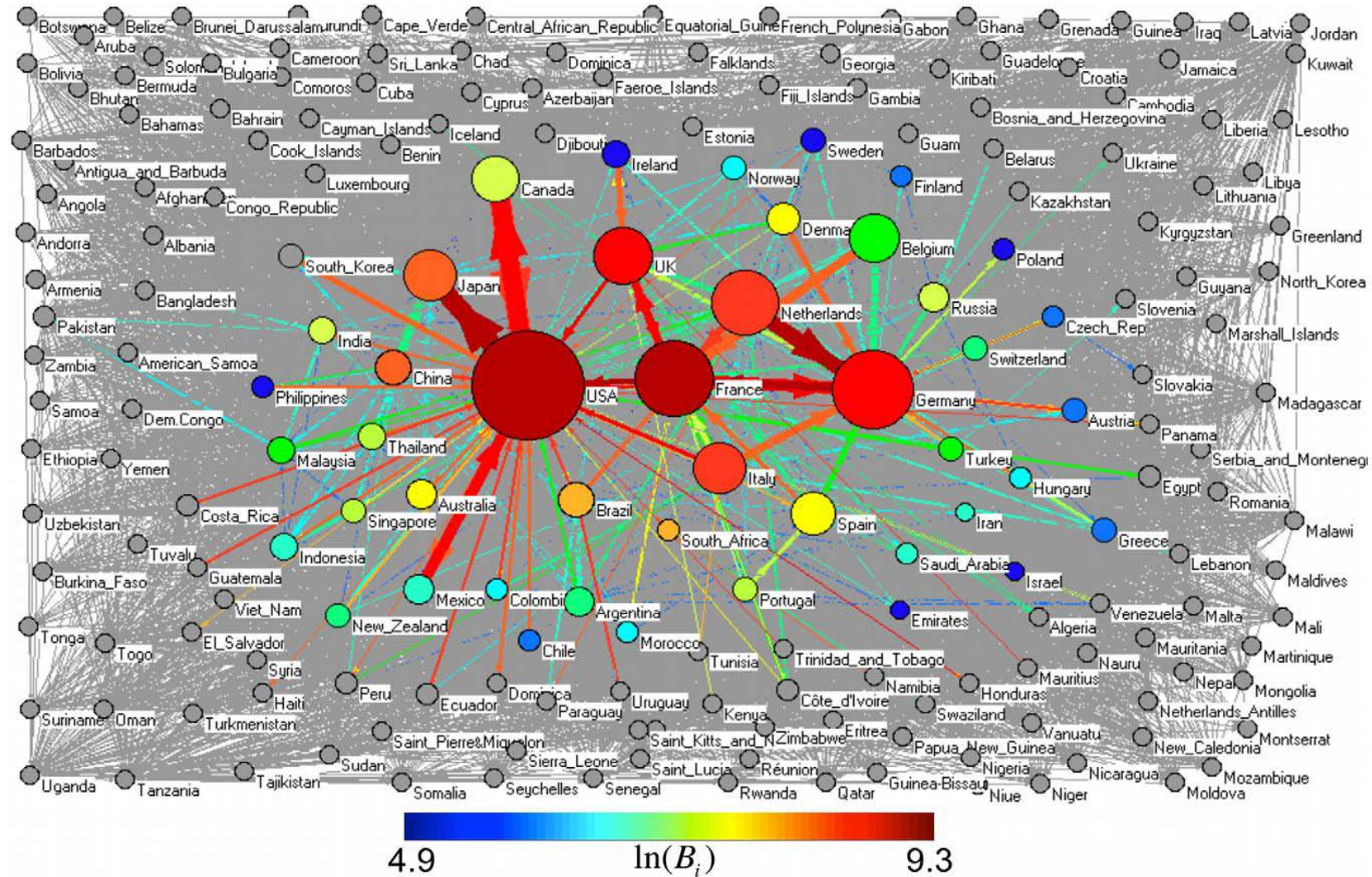
**Weak government – ‘hollowed out’ states**

**Consumerism**

**Concentrated markets**

## The complete International Agro-Food Trade Network in 1998

Source: Ercsey-Ravasz et al 2012 *PLoS ONE* doi:10.1371/journal.pone.0037810.g004



Ercsey-Ravasz M, Toroczkai Z, Lakner Z, Baranyi J (2012) Complexity of the International Agro-Food Trade Network and Its Impact on Food Safety. *PLoS ONE* 7(5): e37810. doi:10.1371/journal.pone.0037810  
<http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0037810>

## **4. WHAT ARE OUR OPTIONS?**

**Different levers for change**

**Use food system power or change the food system?**

**cultural 'rules' or political economy?**

**Past vs Futurism?**

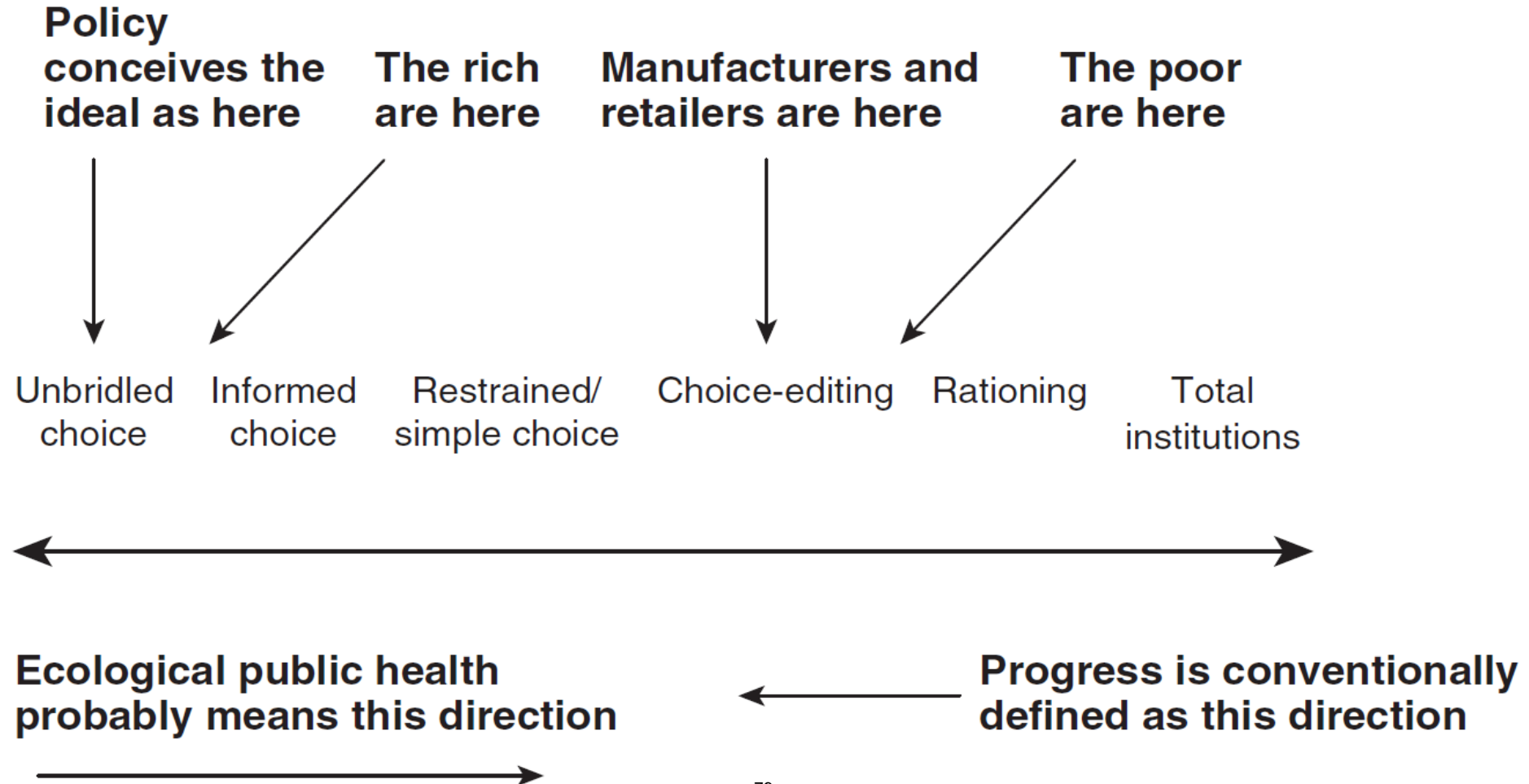
**Technology or people?**

# Option 1: Appeal to reason ... informed consumers

- Labelling
  - But there is no sustainable food labelling in EU
  - It took 20 years to achieve QUID labels!
  - How could we label for biodiversity?
- Information assumes rationality of consumer choice
  - Advertising and marketing budgets are huge
    - E.g. Coca-Cola's marketing budget = 2 x WHO's entire budget
  - Choice is framed by money, class, accident of birth...

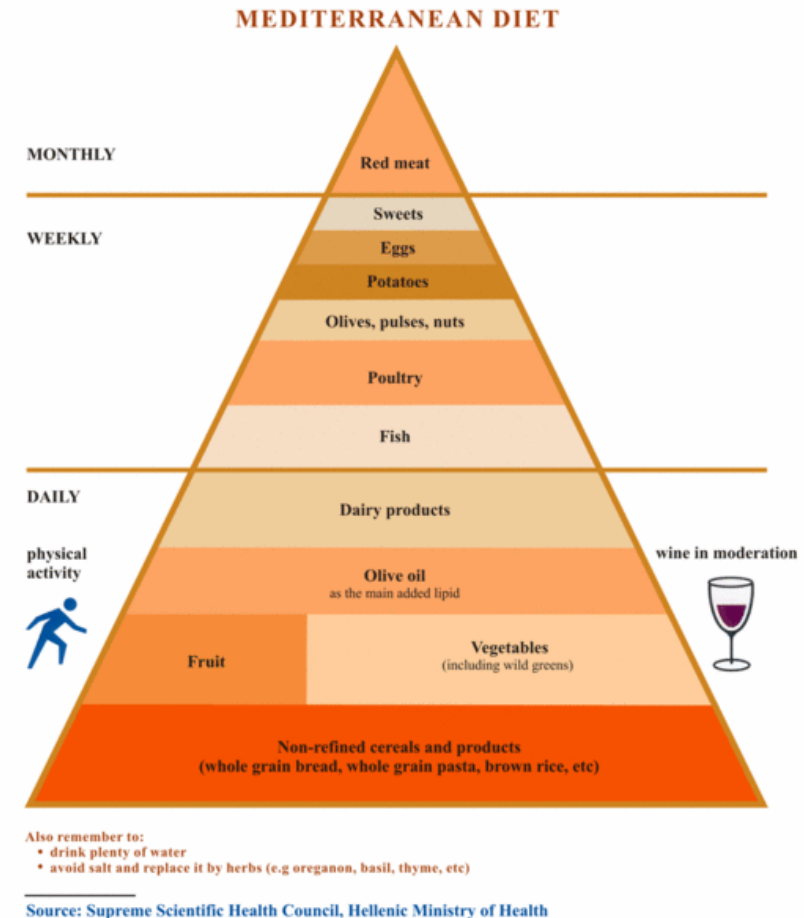
# Choice as a spectrum, framed by circumstance

source: Lang, Barling & Caraher (2009). *Food Policy*. Oxford University Press



# Option 2: appeal to cultural legacy

- The Mediterranean Diet
- Brazil's dietary guidelines (2014)
  - [http://189.28.128.100/dab/docs/portaldab/publicacoes/guia\\_alimentar\\_populacao\\_ingles.pdf](http://189.28.128.100/dab/docs/portaldab/publicacoes/guia_alimentar_populacao_ingles.pdf)
- Michael Pollan:
  - eat only what your grandmother recognises
- BUT...
  - lifestyles have changed
  - rise of ultra-processed foods





# Option 3: 'Modernised' Heritage e.g. *New Nordic Diet*

- Key principles:
  - Health + gastronomic potential + Nordic identity + sustainability
- Overall guidelines:
  - (i) more calories from plant foods and fewer from meat;
  - (ii) more foods from the sea and lakes; and
  - (iii) more foods from the wild countryside.
- Lessons so far:
  - Serious about: chefs, identity, seasonality

# Option 4: Leave it to industry

- The argument is that only industry has control
  - Policy gives power to industry .... But is it enough?
- Actions so far
  - Some action on low carbon supply chains
  - New product development e.g. meatless food products
  - Waste reduction e.g. circular economy (food as material)
- Lessons so far:
  - Reluctance to act unless all do
  - Product development sits within consumerism not changing it

# Option 5: Leave it to markets (consumer-industry dynamics)

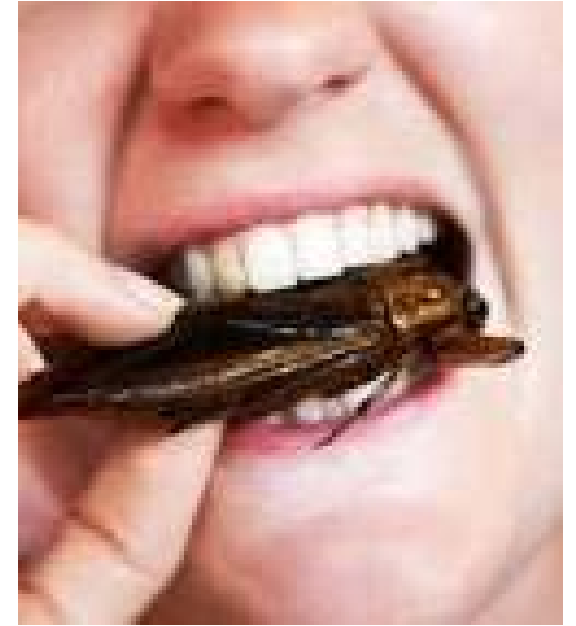
- Popular with politicians – business is responsible
  - ‘Hollowed out’ state
- e.g. veganism as market opportunity
- But...
  - Hype and ‘food wash’ take over
  - Too slow
  - Downplays multi-criteria problem
  - Ignores state levers: law, tax, etc



# Option 6: Hi-tech solutions

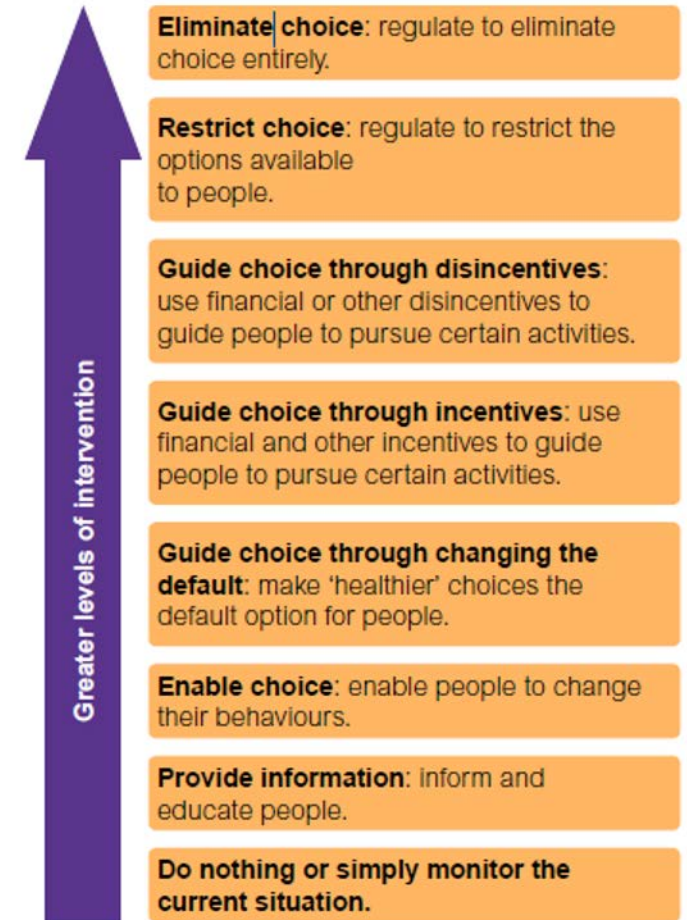


- Lab-based meat
- Nanotechnology
- Synthetic biology
- Industrial insects
- Genetic modification
- Robotics
- Nutrigenomics



# Option 7: Multiple actions at multi-level

- Soft and hard interventions
- Global to local
- **SDG<sup>2</sup>** strategy: SDGs for SDGs
- National processes within Global goals
- Set goals for dietary transition
- National Guidelines to reframe production
- Public engagement:
  - Citizens juries & conventions, public events



Nuffield Council on Bioethics' Intervention Ladder

# CONCLUSIONS

**'Change or go bust'**

**This is possible but will be hard**

**A multi-level world needs multi-lever, multi-actor,  
multi-sector, multi-disciplinary coherence**

**We are all part of this transition**

**There is no single solution**



# Sustainable diets: the centre of good C 21<sup>st</sup> food system



## What this means:

- Multi-criteria
- Public engagement
- Ecological public health
- Diversity of evidence
- Multi-sector, multi-level
- Reconnection



# THE LANCET

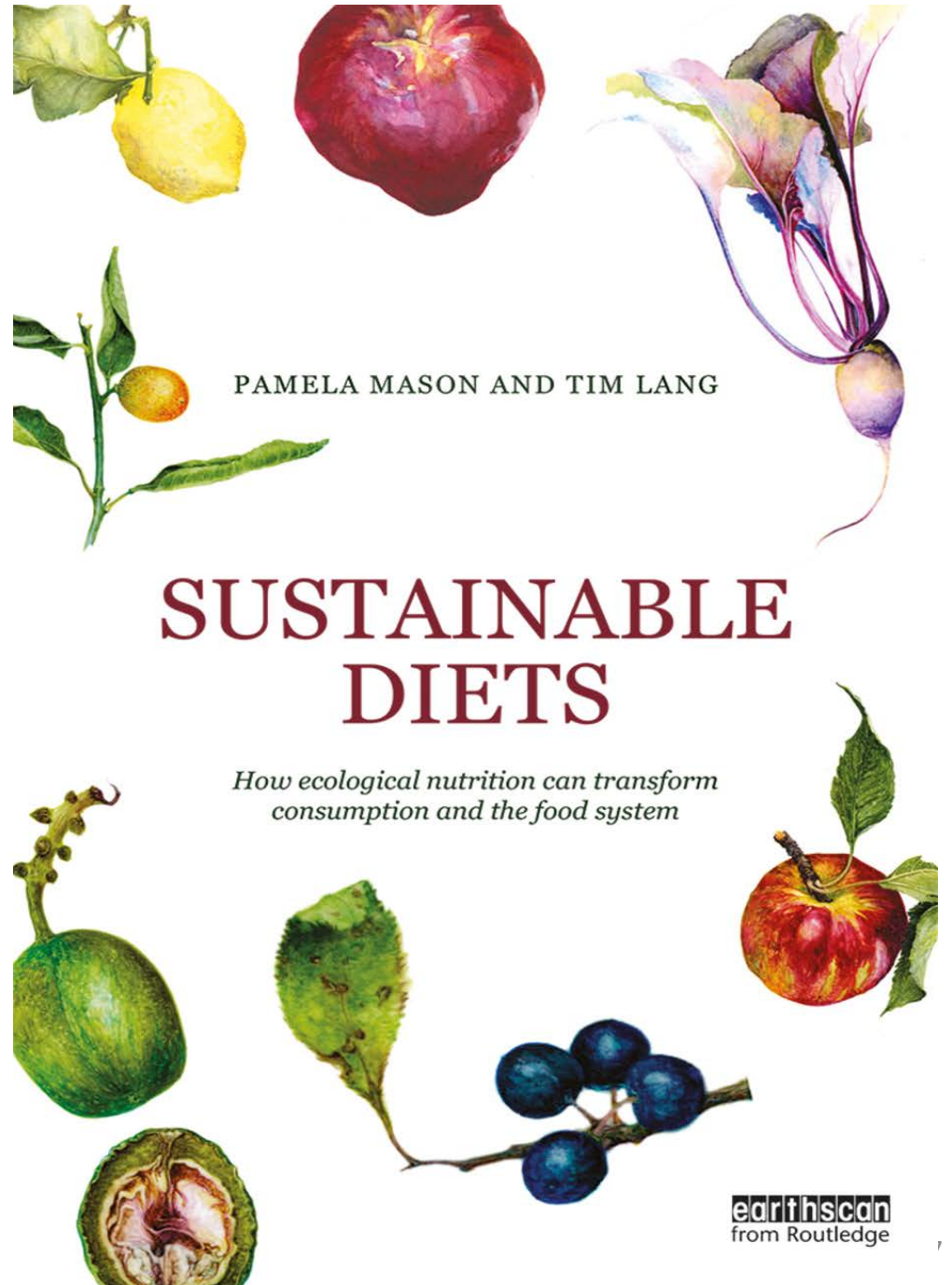
January, 2019

www.thelancet.com

## Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems



"Food in the Anthropocene represents one of the greatest health and environmental challenges of the 21st century."



#### **Annex 4. Bios of keynote speakers**

##### **Harriet Friedmann**

Harriet Friedmann is Professor Emerita of Sociology, University of Toronto. She is a food system analyst, writer and lecturer. She has written many influential articles. She is the co-developer of the historical food regimes approach, which specifies periods of power, accumulation, and diets on a world scale, and even more important, transitions between regimes.

Her recent publications are on international policies and ecological theories related to food system transformation and emergent governance across social/natural scales, as cities and capital have reorganized the biosphere and ethnosphere.

She has been visiting professor in many universities around the world (just to name a few University Lund, British Columbia, Michigan, Aix Marseille, Carleton University in Ottawa, Institute of Social Studies (Erasmus University) in The Hague, the Federal Rural University of Rio de Janeiro, and CIRAD in Montpellier. She was the Distinguished Speaker for the 50<sup>th</sup> anniversary of The American University of Rome.

Her civic engagement includes being Chair – and now counsellor - of the Toronto Food Policy Council, a model for many others that are coming up in the world. She serves on several editorial boards of food, agriculture, and global change journals as well as nonprofit boards, like for example the chair of the Political Economy of the World Systems Research Section of the American Sociological Association. In 2011 she received the Lifetime Achievement award by the Canadian Association of Food Studies.

Her main passions now are seed biodiversity, city food regions, commons, resilience theory, and exploring with others the present possibilities for food system transformation in the world context.

##### **Tim Lang**

Tim Lang has been a Professor of Food Policy at City University London's Centre for Food Policy. He has been engaged in food policy in academia, public research and debate, including the debate on the implications of Brexit for the food system in Europe and the UK. His abiding interest is how policy addresses the environment, health, social justice, and citizens.

He introduced the concept of 'food democracy' in the 1990s in response to the increasing corporate control of and lack of consumer participation in the food system and more recently he has played a fundamental role in introducing and fostering the acceptance of the concept of 'sustainable diets'.

He has written and co-written many articles, reports, chapters and books on sustainable diets, on food policy with an ecological public health perspective, on food wars and "The Atlas of Food. Who eats, what, where and why", which won the André Simon award 2003. He writes frequently in the media.

Tim Lang has received many awards and has been a consultant to the World Health Organisation, to the Royal Institute of International Affairs (Chatham House), special advisor to four House of Commons Select Committee inquiries, Commissioner on the UK Government's Sustainable Development Commission and, more recently he was a Commissioner on the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems which published the report 'Food in the Anthropocene'.

## Colin Sage

Colin Sage has been Senior Lecturer in the Department of Geography of University College Cork in Ireland with research interests in food systems, environmental policy and civic initiatives for social change.

He is the author of the book on *Environment and Food* used in many academic institutions. He has co-edited *Transdisciplinary Perspectives on Transitions to Sustainability, Food Transgressions: Making sense of contemporary food politics and Strategies for Sustainable Development*. He has published over 60 peer-reviewed journal articles and book chapters and delivered more than 100 keynote lectures and conference papers.

Colin Sage is an honorary Visiting Professor on the Food Studies program at The American University of Rome where he also carried out a review of program after its first three years and is the External Examiner for the theses. He is also Visiting Professor at the at the University of Gastronomic Sciences; served as External Examiner at City University London - for their MSc in Food Policy and for Masters programs in the School of Geography, King's College London. He is a member of the International Advisory Board for the Centre for Rural Economy at Newcastle University and Associate Editor of the *International Journal of Agricultural Sustainability* and co-editor (with Mike Goodman) of the book series Critical Food Studies. He has participated in a number of EU-funded research projects and has been a Visiting Scholar in the School of Social Sciences, University of Tasmania, at the University of Bergamo and an Exchange Professor at Colby College, in Maine.

As an academic, Colin is strongly committed to public engagement. He has served as Chair of the Cork Food Policy Council which he helped to create in 2013. He is also strongly committed to developing trans-disciplinary conversations around ways of addressing contemporary environmental challenges.

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# **Avoiding Malthus 2.0: the links between human diets and health and climate outcomes in the world's macro-regions during the last 50 years**

## **Introduction**

Planet Earth's natural resources, such as land, freshwater, raw materials etc., have to be shared among an increasing number of people (and farm animals). Moreover, human life expectancy has continuously increased. Consequently, more people consume for longer, leading to fears whether there is enough for all of them, now and in particular in the future.

One particular concern is about human diets and their resource implications. Globally, agriculture accounts already for up to 40% of global land use, 70% of freshwater withdrawals and 30% of greenhouse gas emissions (FAO, 2017). The question is whether humankind can go on consuming food and drink as it currently does.

While food security fears have been with humans for their entire existence, the British scholar Thomas Malthus, at the turn of the 18th century, introduced the notion of the "population trap". Rapid population growth would eventually outstrip agricultural production thus leading to shortages of food supply and starvation. The much more recent concerns about food system sustainability add fears that current agricultural production practices damage environmental ecosystems and world climate, thus threatening the natural resource base of future generations. The current perception is that the very activity of food production that is meant to keep humans alive kills them eventually in the long run.

The definition of diet sustainability is complex since it comprises multiple criteria. However, dietary diversity is a key recommendation for healthy food intake (WHO, 2018; Willet et al., 2014) while a low consumption of animal products is considered to have minimum negative environmental and climate consequences (Searchinger et al., 2018; Smith et al., 2013).

## **Methods and data**

This study investigates the evolution of the world's macro-regional diets between 1961 and 2013, using three indicators:

- a) the share of daily per capita calorie intake derived from vegetable/plant products (range from 0 to 1);
- b) the variety of vegetable/plant products consumed, measured by the Simpson diversity index (Simpson, 1949) (range from 0 = no to 1 = maximum variety);
- c) total annual food calories consumed in a given macro-region and year, reflecting the contributions of both total population in this area and its per capita calorie intake per day.

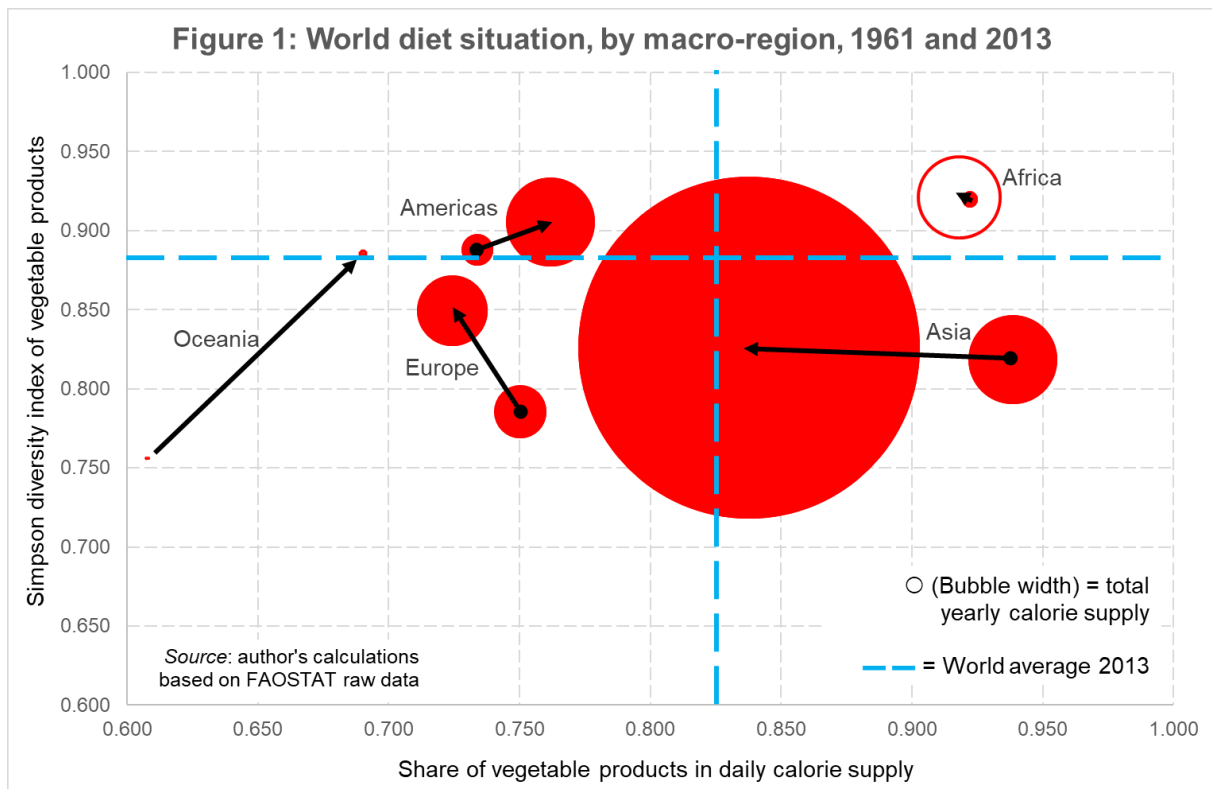
The macro-regions and years covered are: Africa, Americas, Asia, Europe, Oceania and World for 1961, 1970, 1980, 1990, 2000, 2010, 2013.

Raw data were taken from FAOSTAT, Food Balance Sheets, food supply (kcal/capita/day).

## **Results and discussion**

The summary results are presented in Fig 1. For space reasons, the evolutions of the individual macro-regional diets for the years mentioned are not discussed in this abstract.





The results show that:

1. The world average diet became more based on animal products and remained unchanged regarding the variety of vegetable products consumed. (Fig 1 shows only 2013 values.) The share of kcal in daily food intake derived from vegetable products decreased from 84.6% (1961) to 82.2% (2013), while plant product variety decreased slightly from a Simpson index score of 0.888 to 0.881. However, both changes are comparatively small. At the same time, total world calorie consumption more than tripled (from  $2.48 \times 10^{15}$  kcal per year to  $7.59 \times 10^{15}$  kcal per year; not shown in Fig 1).
2. Macro-regional consumption patterns are not uniform (see Fig 1). In Africa, the share of vegetable products in the regional diet slightly fell from 92.2% (1961) to 91.8% (2013) while the variety index score remained virtually unchanged (0.920 to 0.921). Over the same period, total calories supplied increased more than fivefold. The diet of the Americas improved in both measures (vegetable share 73.4% to 76.2%, plant product variety from 0.888 to 0.905), while total calorie supply almost tripled. In Asia, the share of vegetable products in the diet fell from 93.9% to 83.8%, the variety index score slightly improved from 0.819 to 0.826 and total calories supplied almost quadrupled. The European diet's share of vegetable products decreased from 75.0% to 72.4%, while vegetable product variety increased from 0.786 to 0.849, and total calorie supply increased by 34%. Finally, the Oceania diet also improved in both measures (plant-product share from 60.8% to 69.0%, plant product variety from 0.756 to 0.885) while total calorie supply increased by a factor of more than 2.5.

Life expectancy rates improved in all macro-regions over the period analysed. According to Riley (2005) and WHO (online), the world average lifespan increased by 48% from 48 years (1950) to 70.8 years (2013). In Africa, over the same period, it increased by 65% to 58.8 years, in the Americas by 31% to 76.5 years, in Asia by 73% to 71.8 years, in Europe by 25% to 80.6 years, and in Oceania by 22% to 77.5 years. Life expectancy depends on multiple factors. Suboptimal diets only account for about 20% of deaths globally (GBD 2017 Diet Collaborators, 2019).

The links between diet diversity as well as plant-product content and life expectancy are contrary expectations whether for absolute levels or changes over time. Correlation coefficients are negative and larger for plant-product content (−0.9 and −0.7) than for diet diversity (−0.5 and −0.7).

Food systems contribute 19–29% of global anthropogenic greenhouse gas (GHG) emissions of which agricultural production, including indirect emissions resulting from land-cover change, contributes 80–86% of total food system emissions (Vermeulen et al., 2012). In 2013, food represents 97% of world agricultural production (value) and 23% of world food production was exported, according to FAOSTAT Production and Trade databases (online).

Regionally, agricultural production can differ from food consumption. In 2013, the shares of food in agricultural production value were: Africa 98%, Americas 97%, Asia 96%, Europe 99.5% and Oceania 85%. In the same year, net food exports represented −11% of production in Africa, 12% in the Americas, −5% in Asia, −2% in Europe and 50% in Oceania. For 1961, no comparable data are available in the FAOSTAT Production and Trade databases (online).

Macro-regional per capita food system GHG emissions in 2013 amounted to (kgCO<sub>2</sub>eq): Oceania 1,939, Americas 1,153, Africa 816, Europe 779, Asia 527. These numbers are agricultural production emissions from the FAOSTAT Emissions database (online) adjusted for food shares and net exports. The correlation coefficient between 2013 macro-regional diets' plant-product shares and food system per capita GHG emissions is −0.64. Europe, in particular, does not fit the pattern since it has low emissions despite a low plant-product share.

## Conclusions

Assuming data reliability and method validity, the presented analysis suggests that the nexus between diets and health and climate outcomes is not fully evident at the macro-regional level. Therefore, we should avoid Malthus 2.0 – i.e., scientific food pessimism. Maybe, food system GHG emissions are better tackled at the supply side by tightening production standards in particular for ruminant products, which would cause their costs and prices to rise and their demand and consumption to fall. Moreover, the limitations of dietary contributions to overall health should perhaps be more widely acknowledged.

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Christian Fischer is a professor of agrofood economics, management and marketing at the Free University of Bozen-Bolzano. He has earned degrees and/or worked in various countries such as Germany, Australia, France, Italy, New Zealand, Kosovo, Turkmenistan, Chile and Ethiopia. His work covers local and global agricultural and food markets, value/supply chains, businesses/organizations and policies as well as rural development. He has been an advisor to various organizations including the EU Commission and the OCSE. He is the current study course director of the BSc programme of Agriculture, Food and Mountain Environment. He was the co-coordinator and lead scientists of an EU-funded Framework Programme 6 research project. He was the president of a farmers' producer group and he is currently the co-speaker of the South Tyrolean Food Policy Council.

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**Title:** Institutional and data limitations to operationalizing sustainable diets: Perspectives from Kenya and Vietnam

## **Introduction**

There is an urgent need to reshape food systems to safeguard human health, the livelihoods of marginalized groups, and use of the planet's natural resources – interconnected goals that are integral to the concept of “sustainable diets” (Mason and Lang, 2017). However, a major barrier to achieving sustainable diets is defining clear interventions points. Parsing the Sustainable Development Goals (SDGs) exemplifies this challenge. The first three of these goals—addressing poverty, hunger, and improving human health—all of which are directly linked to diets, include 28 individual targets, and identify many ambiguous objectives that do not provide clear policy guidance (Blesh et al., 2019). Furthermore, while more than 30 sets of guidelines for sustainable diets have been developed by non-governmental organization (NGOs), business organizations and government agencies globally, the majority of these guidelines lack sufficient scientific evidence to support their recommendations, and many narrowly focus on single food categories or sustainability concerns (Joseph and Clancy, 2015). Moreover, the segregation of data collection, analysis and related decision making within sectoral silos often prevents information from reaching the most relevant decision makers and from being applied across sectors (Abson et al., 2017). How then, can such frameworks and data scenarios guide decision-making on the ground? Based on case studies of Kenya and Vietnam, our study aims to understand the barriers and possibilities of operationalizing and achieving “sustainable diets” at the local level in a project we refer to as *Entry points to Advance Transitions towards Sustainable diets* (EATS), a research partnership between the University of Michigan and the Center for International Tropical Agriculture (CIAT).

## **Methods**

The EATS project selected Kenya and Vietnam as sites for analysis because they each offer unique policy contexts and face dynamic diet-related disease burdens and challenges related to equitable and sustainable resource use. This particular paper focuses on the results of a piece of the more expansive EATS project – 114 semi-structured interviews we carried out in 2018 with national and sub-national food systems researchers, policymakers, private sector leaders, and development organizations in rural and urban sites in each country (66 in Kenya and 48 in Vietnam). We identified interviewees using a chain sampling approach, stratified across location, the type of organization they worked for, and primary sector of focus and focused on individuals who are considered to be part of epistemic communities (i.e., actors or institutions that policymakers look to for authoritative guidance about policy solutions). Drawing on policy process theories (e.g., Sabatier and Weible, 2014), our aim was to determine: a) the extent to which leading decision-makers were already carrying out work that aligns with sustainability diets frameworks, b) how locally-available food systems data and institutional collaboration are currently debilitating or aiding efforts to improve the sustainability of diets, and c) opportunities to advance more holistic, sustainable diets-focused decision-making. Our analysis was based on thematic content analysis of the transcribed interview data using a constant comparisons approach.

## **Results**

We found that state-level organizations, businesses and other institutions who are intervening in local communities – regardless of the location – rarely address or see problems holistically across agricultural production, nutrition, livelihoods and environmental impacts simultaneously, though many link at least two of these sustainable diet domains. We found that only a quarter of organizations are working across all four of these sustainable diet domains and less than ten percent identified issues needing urgent

attention that cross all four domains. Even if more actors were to see food systems problems more holistically, a lack of evidence is a considerable barrier to more integrated decision-making, because of a combination of access issues or poor coordination around existing data, as well as concerns with outdated data, poor quality data, and the limited amount of disaggregated data. This forces most organizations to collect their own data each time they launch a new intervention. Data issues were similar in both countries, though Kenya's health and agricultural sectors face unique barriers trying to align efforts vertically between national and local efforts due to recently enacted government devolution. Nearly half of the organizations in both countries also noted challenges with collaboration across sectors and institutions, with only eleven percent of organizations noting collaborations that cross all four sustainable diet domains. In Vietnam, the highly centralized national government creates major horizontal coordination issues as ministries and institutes either duplicate responsibilities or work in isolation across sustainable diet domains.

### **Discussion and Conclusions**

Minimal attention has been paid to understanding sustainable diets in low and middle income countries (Nemecek et al., 2016), particularly as it relates to the development of actionable policies that simultaneously address agricultural, environmental, economic, and health related issues. As the SDGs and sustainable diet guidelines continue to be promoted globally, our findings reinforce the need for strategies to increase and improve the quality of data being collected locally and to overcome the intra-organizational politics and institutional barriers that limit cross-sector collaboration, such as collective impact models, data sharing platforms, shared measurement agreements, and collaborative food systems planning. Despite the challenges we found, in both countries, regional and national initiatives are emerging to coordinate data sharing and to collect more integrated data to better understand the multiple drivers of food insecurity, an encouraging sign that a more holistic approach to food systems planning is beginning to take root. The EATS project has also initiated several partnerships with various ministries and national institutes in each country to offer practical examples of the insights and potential leverage points (i.e. points for interventions that could effectively shift multiple axes of food systems toward enhancing the sustainability of diets) that a more holistic analysis can offer.

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## **Towards a sustainable food system in the United States: Opportunities to address environmental impacts through food and nutrition policies**

Diego Rose, Tulane University

Agriculture has a major impact on the environment, contributing to extensive clearing of forests, overuse of water resources, water pollution, biodiversity loss, and climate change (Foley, 2011). Globally, the agriculture sector, including forestry and land use, account for about a quarter of greenhouse gas emissions (IPCC, 2014). The United States (US) is the second largest contributor to global greenhouse gas emissions. Its food and agriculture sector contributes sizably to this, as well as other environmental impacts.

Recent surveys of the American public have demonstrated a strong acknowledgement of climate problems and a demand for action to be taken (Leiserowitz et al, 2018; EPIC, 2018). Despite this public opinion, policy action at the federal level is stalled. The current administration plans to withdraw from the Paris Agreement and has substantially cut funding for the US Environmental Protection Agency. Debate about a Green New Deal, a dramatic resolution to move the economy towards zero-carbon emissions in a decade, was voted down in the Senate on a procedural motion (Daly, 2019).

This paper highlights food and nutrition policy opportunities throughout the US food system that could result in more environmentally sustainable alternatives to the system's current path. Consumption, marketing, distribution, and production policies are discussed. Where sustainability concerns have been absent from such policies, potential adaptations are outlined. The main focus is on federal policies, but given the current intransigence at this level, the paper also illustrates examples of state and local policy initiatives that could fill the federal policy vacuum and precipitate action in the short-run.

Three important objectives for improving the environmental sustainability of the American diet are to reduce excess ruminant animal consumption, food wastage, and overeating. Federal policies that could support such consumer choices include dietary guidance and consumer education. The Dietary Guidelines for Americans (DGA) are developed and published every five years (DHHS & USDA, 2015). The DGA not only informs consumers about healthful choices but also guides other national nutrition policies, including dietary requirements for the National School Lunch Program and other programs. Unfortunately sustainability considerations were not included in the latest version of the DGA, despite expert committee advice that a US diet which is more plant-based could improve health and reduce environmental impacts (DGAC, 2015). Future inclusion of sustainability as part of the DGA would signal the importance of the issue to the American public.

Consumer education programs supported by the federal government are integrated with low-income nutrition assistance, including the Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamp Program) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Operating throughout the country, these and other USDA assistance programs have a wide reach, serving close to a quarter of Americans (USDA, 2017). The education components of these programs are much smaller in scope. Although there has been significant efforts to increase fruit and vegetable consumption through these components, they have not been oriented around replacing animal with plant protein foods, nor have they focused on the sustainability of foods. Inclusion of such information with practical advice, including cooking tips, could also assist in increasing consumer acceptance of alternative protein sources.

These assistance programs do offer the potential for subsidizing sustainable foods, a stronger mechanism for influencing consumption than education. A number of local SNAP pilot projects have sought to increase fruit and vegetable consumption by incentivizing SNAP purchases of these foods with additional matching funds. If scaled up and expanded to include plant protein foods, such as legumes, they could support consumer substitution away from beef. Taxes on high-

carbon foods might have more impact on consumption, but they are unlikely to garner popular or political support, at least in the short run.

Food labeling is a marketing policy that could signal consumers about sustainability. Although there are well-developed regulations for mandatory nutrition labeling of foods, sustainability has been addressed through voluntary mechanisms. USDA has an organic certification program with a front-of-package seal (USDA, 2019). This informs consumers of foods produced through approved methods that promote ecological balance and conserve biodiversity. At least six private organizations certify the sustainability of seafood and use front-of-package seals. However, these can be confusing for consumers and there is a lack of transparency in their development (Food and Water Watch, 2010). Public standards for certification, analogous to the USDA organic certification program, could address some of these problems.

Other federal marketing policies have sought to strengthen local and regional food systems. For example, since the mid-1990s, USDA has supported direct marketing from farmers to consumers, schools, or military installations (Martinez et al, 2010). However, these are relatively small-scale compared to the overall federal investment in agriculture. Increased spending on these initiatives could strengthen small farms through these direct marketing approaches.

Overall US agricultural policy has facilitated large scale mono-cropping with vast transportation networks for distribution of commodity crops. This has had detrimental environmental effects as described above. However, there have been positive contributions to some agricultural policies. USDA conservation spending has grown over the years and is now projected at \$6 billion per year for the latest Agricultural Act of 2018 (CRS, 2019). Originally developed as a response to the "Dust Bowl" environmental catastrophe of the mid-1930's this set of programs includes support payments for: cover crops, resource-conserving crop rotations, and management-intensive rotational grazing; improvement of water quality and wildlife habitats on or surrounding farms; transitions to organic farming; and development of comprehensive farm-level conservation plans (CRS, 2019). This is the best current example of federal policy directed at improving sustainability. Future spending increases on these programs could expand their beneficial effects.

Although federal policies outlined above might ultimately have the strongest impact on moving towards a sustainable US food system, additional action at this level is unlikely until the current political configuration changes. In the meantime, advances are more likely to be made by state and local governments in conjunction with private partners. Significant political will to promote environmental objectives already exists among states, counties, cities, and other institutions, as evidenced by the US Climate Alliance, the 'We Are Still In' Declaration, and other agreements that sprouted in response to the current administration's decision to withdraw from the Paris Agreement (USCA, 2018; WASI, 2018). Significant food system policies have already been enacted at state and local levels. For example, California passed legislation in late 2016 giving its air regulatory board authority to set goals for reducing short-lived climate pollutants, including substantial reductions of methane emissions from dairy (CDRF, 2017). In New York City, the Mayor's 'green new deal' has set out to reduce emissions in the food sector by cutting the purchase of beef by 50% in city-controlled agencies such as hospitals, schools, and correctional facilities (NYC, 2019). A number of universities and private corporations have signed onto the World Resources Institute's Cool Food Pledge, which seeks to reduce the carbon footprint of institutional food services. States could also use tax incentives to support the development of clean alternatives to beef, such as plant-based products (Dutkiewicz, 2019).

In sum, there are opportunities throughout the food system for federal food and nutrition policies to improve sustainability, but current political will is lacking to make this happen. Actions at the state and local level, in conjunction with private organizations, could facilitate short run improvements in sustainability. Consumer-based initiatives can drive this process because producers will follow consumer demand and because American consumers are motivated by sustainability concerns.



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PROPOSAL FOR A DISCUSSION PANEL AT THE 'SUSTAINABLE FOOD SYSTEMS <>  
SUSTAINABLE DIETS' CONFERENCE (FRIDAY, 11 OCTOBER 2019)

<https://graduate.aur.edu/events/conference-sustainable-food-systems-sustainable-diets>

TITLE

**Legumes: cornerstones of the transition towards more-sustainable agri-food systems?**

*We invite all food scholars, especially sustainable diets and food policy experts, other speakers/participants of the conference to be on the panel and help us discuss the role of legumes in sustainable diets, and the implications of the protein paradox for the food system.*

**1. The role of legumes in current diets**

**Marta Wilton Vasconcelos**, Universidade Católica Portuguesa, CBQF Laboratório Associado, Escola Superior de Biotecnologia, Porto, Portugal

The role of legume grains in meat-reduced diets is not a new concept. Around the 10<sup>th</sup> century, most of Europe was suffering from problems of food shortage and widespread malnourishment. Providentially, around this time, a new system of crop rotation including legumes was adopted, that besides allowing land to be more fertile, provided legume grains to be consumed by the most impoverished populations who lacked much-needed protein, minerals, vitamins, and fibre in their diets. This allowed flourishing of populations, having a profound effect on Europe's current demographics. Fast-forwarding almost 11 centuries, legumes saw their consumption steadily decreasing across Europe, even in countries where they were part of traditional dishes and embedded in cultural heritage (such as the Mediterranean diet). However, a new wave of change has surged in the last decade that could favour a new increase in legume consumption. Reducing intake of foods of animal origin has been pointed out as a necessity for food sustainability. Driven by several factors, including increased consumer demand for healthier, more sustainable choices, there was a surge in the development of novel food products that include legume grains in their composition. However, vegetarian meals, particularly those containing legumes, are not always easily accepted, and historical changes from traditional meals to processed, easy to prepare, readily available options have emerged. Here we will show that legumes have versatile and distinct seed composition and cooking properties and that many relationships may be found between seed traits and pasting and cooking behaviours of different germplasm collections. We will also summarise the identified barriers (unfamiliarity on how to cook legumes; lack of time; organoleptic traits; side effects) and leverages (wanting to eat "healthier"; reduce the environmental footprint of diets; lowering the intake of animal protein) for increased consumption. We will also highlight the work done on germplasm characterisation for nutritional profiling, our local and global efforts to develop novel legume-based products and dishes while at the same time promoting their consumption as part of a healthy diet across Europe. Several examples of product development and testing will be showcased. Finally, legume grains are nutrient-rich foods that have well-established benefits for health, such as in the prevention of cancer, obesity, cardiovascular disease, hypertension, diabetes mellitus, and microbiome modelling. As part of a study that is looking at the health impact of a replacement diet that includes legumes on a daily basis will also be showcased. Results show the potential of legumes as raw material for developing new food products that are appealing to a wide suit of consumers but whose uptake is very much legume and country-specific. Also, a positive change in consumer's

perceptions towards legumes is opening doors to a new framework of sustainable diets where legumes will play a major role.

**Marta Wilton Vasconcelos** (female), is working as principal investigator and docent, at ESB-UCP having worked in the field of legume nutrition for the past 13 years. She graduated in Biology from Lisbon University in Portugal after which she conducted her PhD studies in the Philippines at IRRI, developing an iron and zinc biofortified rice. She did a Postdoc position at the United States at the Children's Nutrition Research Center, at Baylor College of Medicine and after that received a permanent position as a Research Associate. In 2007 Marta Vasconcelos was acknowledged by the US Citizenship Department as an Internationally Recognized Outstanding Researcher. In 2008 she established the PlanTech lab, at ESB-UCP, working on the field of legume and cereal nutrition and biotic stress.

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## 2. Governance solutions for legume-based food systems

**Bálint Balázs**, Environmental Social Science Research Group, Budapest, Hungary

Legumes are at the centre of policy debates concerning global food security, sustainable food production systems and our transformation towards more sustainable food systems. Where they exist, policies to realise legume-based food production have failed to increase legume-based diets and even production over the long term. The marginal role of legumes in agri-food systems illustrates 'pars pro toto' our unbalanced agri-food systems which are 'locked-in' to unsustainable states of operation that systematically obliterate the true economic, social and environmental costs of current production and consumption patterns. Such legume paradox presses for more effective policy innovations to avoid further incoherencies among policies across sectors. However, this needs to be realised in a highly fragmented, unknowable, 'no-one-stop-shop' policy environment. Public funding for legume production and consumption would provide clear opportunities for synergies, as 'sustainable diets' might be a policy goal that is most widely acknowledged. This paper is an action researchers' reflection on a non-conventional, deliberative policy approach that seeks to engage multiple stakeholders and decision-makers in envisioning more favourable policy and governance frameworks. Several examples of policy inconsistencies for legume-based food systems will be presented from Europe and beyond. We also highlight the role of new methodologies required for policy deliberations in science-society-policy interfaces to create policy innovations that meet current and future food and nutritional security challenges. New insights from the public deliverables of the European Union (EU)-funded H2020 project Transition paths to sustainable legume-based systems in Europe (TRUE), and the multi-stakeholder European Legume Innovation Network (LIN) workshops ([www.true-project.eu/lin-workshops/](http://www.true-project.eu/lin-workshops/)) will be presented. Our results point out how to enable co-innovative practices to bring into effect policies that may more successfully support current, and future, food and nutritional security challenges via the use of legumes. Consumers' demand for nutritious, affordable, environmentally friendly food needs to rely on the diversification of the agri-food systems which entails supply chain actors' cooperation towards a more-effective policy environment.

**Bálint Balázs**, MA in History and Sociology, PhD in Environmental Sciences. Senior Researcher and Executive Manager of the Environmental Social Science Research Group, Budapest, Hungary. He has international research experience in EU FP6-7 and H2020 projects in the field of sustainable and local food systems, transition to sustainability and policy analysis, as well as public engagement, science-policy dialogues, cooperative research and participatory action research. He is a board member of the Environment & Society Research Network of the European Sociological Association.

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# Connecting food-related well-being and social sustainability towards achieving sustainable food diets

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## Abstract

This paper proposes a reflection on sustainable diets and (forced) migration by rooting sustainable diets in the context of social sustainability to which food-related well-being is proposed as a central feature; we do so by analyzing the food and dietary practices of Syrian refugees in Stuttgart, Germany as a case study.

Migration has always been a feature of human beings' life, but recently the dramatic eviction of people from their country of origin has occurred as a result of the spread of political and ethnic armed conflicts across different countries and their underlying causes of climate change (Abel et al., 2019). According to a recent report on food and migration (MacroGeo & BCFN, 2017), food systems constitute a part of the push and pull factors of migration. Indeed, recent major migratory movements have resulted from a turmoil in the traditional food systems, due to "climate change and droughts (Sahelian countries in the 1970s), inadequate food policies (Ethiopia in the 1980s), controversial trade agreements (West African countries since 1990s)", or armed conflicts and their implication on food availability and accessibility (Syria, Yemen, Iraq, Libya since 2010s). In the destination countries, usually the developed ones, the lack of labor in agro-food sectors has acted as a pull factor for those migrants and facilitated the exploitation of intensive workers (MacroGeo & BCFN, 2017). If we look at the migration flows that invaded Europe in the past five years, we cannot help but notice that, though losing its emergency trait and destined to stabilize, migration will stay as a feature of our contemporary society. After arriving in a new country, migrants have to adapt to different lifestyles and are confronted with a variety of economic and social adversities, which results in psychological discomfort and stress. This process is usually much more challenging for asylum seekers and refugees due to a great deal of uncertainty they experience and the post-traumatic stress and emotional problems resulting from loss of family and social support (Carswell et al., 2011; Rosenblum & Tichenor, 2012). Recently, food turns out to play a substantial role in fostering or blocking integration processes, as the link between migration and food is much more profound than one might think. Migrants are often coopted into different (unsustainable) diets, based on Western food products with the whole range of health-related and environmental issues these bring forth. Unfortunately, the present food system which is supposed to nurture human health and anchor environmental sustainability are currently threatening both people and the environment (Willett et al., 2019). Lately, efforts are being made to transform the food systems into sustainable, diverse and inclusive ones. In order to reshape the food system towards sustainability, and in a way that ensures a better quality of life for all, we must include all the constituents of the society; the impoverished, the minorities and the migrants. By including them and understanding their food-related well-being, effective strategies and interventions that impose drastic changes in consumption patterns towards healthy eating and healthy planet can be defined. Achieving this requires a shift in the focus from "feeding people" to "enabling people to nourish themselves" (Haddad et al., 2016); i.e. empowering them to make informed and autonomous food choices in a way that ensure sustainability.

In this paper, we pose the following question: How should sustainable diets be understood in complex contexts like the one experienced by refugees and enacted by people in a foreign and often hostile context, far from home and habits? We argue that a reconfiguration of the food system needs a better understanding of the relationship between food-related well-being and sustainability. The latter consists of environmental sustainability which is strongly affected by the current and the future food systems, and the socio-economic dimension which could be arguably represented by the concept of well-being (Kuhlman & Farrington, 2010). In this context, the well-being represents the “livability of the environment”, more precisely the objective conditions that make people happy and the intangible needs that enable them to achieve their potentialities (Kuhlman & Farrington, 2010). Therefore, we root our reflection about sustainable diets and migrants in the context of the third pillar of sustainability, i.e., social sustainability. We argue that the concept of food-related well-being is useful to understand the intangible food-related needs of refugees, such as integration, contribution (participation), acceptance (cultural values and openness), actualization (dignity and equity) and coherence. However, meeting these needs might be very challenging in the case of migration and the current failure of the food system. Moreover, we argue that understanding the food-related well-being of refugees and their social sustainability will enable the design of better programs that empower them to make informed food choices that are sustainable and to participate in reshaping the food system. Lately, all the efforts to change what people eat ended up being controversial, and some delivered diminishing returns in terms of health, employment and destroying cultural heritage (Carlisle & Hanlon, 2014; Mullens & Sche, 2019). The failure of these interventions could be understood by their inability to overcome multiple challenges, such as nutritionism, economism, consumerism and individualism. Hence, the achievement of a “healthy and sustainable diet” within the current social, economic and cultural system requires a holistic change to reshape the current system (Carlisle & Hanlon, 2014).

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## Using individual food consumption data to estimate the environmental impact of diets: the potentiality of the FAO/WHO GIFT platform

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### Introduction

Food systems, including food production, play a substantial role in global environmental change, contributing to climate change, biodiversity loss, freshwater use, interference with the global nitrogen and phosphorus cycles, and land-system change<sup>1</sup>. Therefore, shifting food consumption patterns towards less resource-intensive diets is key to mitigate climate change<sup>1-3</sup>.

The FAO/WHO Global Individual Food consumption data Tool (FAO/WHO GIFT, [fao.org/gift-individual-food-consumption](http://fao.org/gift-individual-food-consumption)) is an open-access online platform, hosted by the Food and Agricultural Organization (FAO) of the United Nations and supported by the World Health Organization (WHO), aimed at disseminating Individual Quantitative Food Consumption (IQFC) data. The FAO/WHO GIFT platform collates, harmonizes and disseminates existing IQFC data from different countries in the form of microdata and ready-to-use indicators. FAO/WHO GIFT is a growing repository that aims to fill a major gap regarding what people are consuming around the world, and to use these data to better inform evidence-based policies and guidelines on healthy and sustainable diets<sup>4</sup>.

FAO/WHO GIFT collates IQFC data collected through 24-hour dietary recalls or records, which are dietary methods describing in detail all foods and beverages consumed by individuals and in which quantities<sup>5</sup>. The collection of dietary data through these methods allows to assess current food consumption patterns and propose alternative patterns targeted at different population groups, for example through Food-Based Dietary Guidelines<sup>6,7</sup>.

Currently, FAO/WHO GIFT provides indicators in the area of nutrition and food safety. In order to provide standardized age and sex disaggregated food-based indicators, existing dietary data from different countries undergo a harmonization process to be inserted in FAO/WHO GIFT. This process includes the harmonization of food description with the FoodEx2 system, which is a description and classification system developed and maintained by the European Food Safety Authority (EFSA), and that is currently used at global level with the support of FAO and WHO<sup>8</sup>. FoodEx2 consists in a vocabulary of foods with assigned codes structured in a hierarchical manner, which can be used to



classify and describe foods reported in different types of data, such as food consumption, food composition, food carbon-footprint, food chemical occurrence, among others.

Some IQFC data harmonized with FoodEx2 have already been combined with databases of food carbon-footprint in order to assess the environmental impact of diets and help identifying sustainable food consumption patterns.

At European level, the SUSDIET and SUSFANS projects matched IQFC data harmonized with FoodEx1 and FoodEx2, respectively, to greenhouse gas emission (GHGE) estimates values<sup>9,10</sup>. In Italy, FOODCONS (<http://www.foodcons.eu/>) matches Italian food consumption data harmonized with the INRAN-SCAI food categorization to GHGE values<sup>11</sup>.

In the UK, GGDOT (<https://www.ggdot.org/>) combines food consumption data<sup>12</sup> (which are also mapped with FoodEx2), and GHGE data<sup>13,14</sup> to develop visualization tools and other resources (educational games) to engage with children and adults to influence behavioral change towards more sustainable healthy food consumption. GGDOT aims to develop a flexible platform compatible with FAO/WHO GIFT that will 1) link GHGE data from multiple sources 2) enable users to understand the impacts of their own and of the potential interventions to reduce their environmental footprint.

In Brazil, a database matching food composition to GHGE accounting also for the way foods are prepared has been created<sup>15</sup>. With the help of GGDOT developers, Brazilian researchers are planning to deliver a meaningful use of this data, applying them to support high level decision-making as well as food choices.

The objective of this study is to explore the potentiality of the FAO/WHO GIFT platform to provide indicators related to the environmental impact of diets based on harmonized IQFC data.

## Methods

An analysis of the strengths and limitations of the FAO/WHO GIFT platform as a possible tool to provide indicators on the environmental impact of diets was performed. The analysis covered:

- The methodology and results from projects linking food consumption data already mapped with the FoodEx2 system to GHGE values. In particular, this study investigated the methodology used to select GHGE data for each food and food group;
- The characteristics of the IQFC data inserted in FAO/WHO GIFT in terms of the information usually available to describe foods and which may determine their environmental impact;
- The feasibility of creating new indicators on environmental impact based on the platform's current software technology.

## Results

Through this study, three main possibilities of how to integrate information on the environmental impact of foods in the FAO/WHO GIFT platform have been identified:

1. The FAO/WHO GIFT platform could provide ready-to-use indicators based only on IQFC data. These indicators would present the food consumption pattern of a given population by grouping foods based on their potential environmental impact. Possible indicators could be, for example, the ratio between the consumption levels of bovine meat and that of other meats, or the percentage of proteins deriving from plant-source foods.

2. Alternatively, the FAO/WHO GIFT platform could provide ready-to-use indicators on the environmental impact of diets by matching each of the IQFC datasets inserted in FAO/WHO GIFT with a unique dataset of global estimates of the environmental impact of foods, which may include GHGE estimates, as well as estimates of water and land use for foods.
3. Finally, the FAO/WHO GIFT platform could provide ready-to-use indicators on the environmental impact of diets by matching each IQFC dataset inserted in FAO/WHO GIFT with either global, regional or country-specific estimates of the environmental impact of foods, based on their availability for each country/region and the intended use of the data.

## Discussion and Conclusion

Each of the three identified possibilities for integrating indicators on the environmental impact of diets in FAO/WHO GIFT has its advantages and disadvantages.

In the first case, the indicators would be based only on harmonized IQFC data and there would be no link with estimates of food carbon, water or land footprint. This would be easier to apply to the current FAO/WHO GIFT software, but would lack the connection with actual data on the environmental impact of foods. Users would be able to download the IQFC microdata mapped with the FoodEx2 system from the FAO/WHO GIFT, and match the dataset with other sources of data outside the platform.

In the second scenario, the matching between datasets of IQFC and of food environmental impact could be done either manually by the data manager before inserting the IQFC dataset in FAO/WHO GIFT, or automatically by the FAO/WHO GIFT system. In order to do this, all datasets used (IQFC, GHGE, etc.) would need to be mapped beforehand with the FoodEx2 system. This option would have the advantage of easing the matching of information on the environmental impact of foods to the food consumption data, but there would be the need to carefully explore the uncertainties associated to global estimates of carbon, water and land footprint for each food.

The third option would allow IQFC data from different countries to be matched with the best available dataset on food environmental impact (country-specific, regional or global) based on the availability of data for each country, and also on the intended use of the data. Also in this case, all datasets used would need to be first mapped with the FoodEx2 system, and understanding the uncertainties associated to country or regional-specific estimates compared to global estimates would be needed. In addition, the current technology of FAO/WHO GIFT would not allow for an automatic matching of information directly in the system, which would need to be done necessarily by the data manager before inserting the IQFC dataset in the FAO/WHO GIFT system.

In conclusion, this study suggests that the current technology underlying FAO/WHO GIFT and the typology of harmonized IQFC data available in FAO/WHO GIFT have a high potential to provide useful indicators of the environmental impact of diets, which could be used to promote changes towards more sustainable food consumption practices.

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**Title:** Fostering greater investments across food systems for better nutrition and healthy diets: the case of the State of Palestine.

## Introduction

According to official numbers by the State of Palestine, nutrition situation can be characterized with the double burden of malnutrition. The prevalence of undernutrition, in particular, wasting (low weight for height) and stunting (low height for age) at the population level is lower than the global average and many other countries in the region. The wasting prevalence rates in children under-five is estimated at 1.2%, underweight at 1.4% and stunting at 7.4% (Palestinian Multiple Indicator Cluster Survey (MICS), 2014).

However, overweight and obesity and micronutrient deficiencies (also known as hidden hunger) pose significant challenges to the health and well-being of people, *see Table 1*. Overnutrition (classified as body mass index between 25 and 30) and obesity rates (classified as body mass index equal to or higher than 30) have been on an upward trend over the last two decades. The adult male overweight prevalence in the State of Palestine is 64%, which is higher than the Western Asia and global average, of 61.5% and 24.8% respectively (Development Initiatives, 2018). Similar trends are seen for adult female overweight rates. The female adult overweight prevalence in the State of Palestine is 69.5%, which is higher than the Western Asia and global average, of 66.3% and 28.4% respectively (Development Initiatives, 2018).

*Table 1: Overview of micronutrient deficiencies in the State of Palestine (data from 2013). Source: Palestinian Micronutrient Survey (2013) and MAS (2017).*

| Micronutrient deficiencies | Pregnant women (18-43 years) | Lactating women (18-48 years) | Under-five children (6-59 months) |
|----------------------------|------------------------------|-------------------------------|-----------------------------------|
| Vitamin A                  | 54.8%                        | 28.7%                         | 72.9%                             |
| Vitamin B12                | 62.80%                       | 20.60%                        | 10.90%                            |
| Vitamin D                  | 99.3%                        | 98.7%                         | 60.1%                             |
| Vitamin E                  | 21.6%                        | 44.1%                         | 64.3%                             |
| Zinc                       | 71.1%                        | 90.7%                         | 55.6%                             |
| Iron-deficiency anaemia    | 30.9%                        | 29.0%                         | 26.5%                             |

## Policy environment for nutrition

In the context of deteriorating nutrition situation in the State of Palestine, there is a need to think holistically about approaches that effectively reach nutritionally vulnerable groups and address the underlying causes of malnutrition. In the State of Palestine, eradicating malnutrition in all its forms – as envisaged in the Sustainable Development Goal #2 – requires multi-sectoral planning and actions, spanning through agriculture, health, education, social protection, labour, social development, local government, environment, energy and water. Nutrition plays a key role in the attainment of Agenda 2030 and the State has already begun to translate and operationalize SDGs to its local context, cognizant of the role of sustainable agriculture and food systems in promoting healthy diets and better nutrition. Moreover, food and nutrition security is fully reflected in the National Policy Agenda (NPA) 2017-2022 and in its specific sectoral strategies (PMO, 2016). The creation of technical committees covering the SDGs, especially the technical committees on SDG 1 and 2, provide an innovative mechanism to fostering greater collaboration and synergies across various line ministries and departments for achieving zero poverty and zero hunger, eliminating malnutrition, improving food security and promoting sustainable agriculture. The result of the

work of these committees has been the drafting of the SDG 2-specific National Food and Nutrition Security Policy (NFNSP) 2019-2030.

### **Food systems investments for better nutrition**

In the State of Palestine, improving nutrition through multisectoral approaches faces financial challenges, and issues pertaining to operational and technical capacities at the national level. Previous discussions with the nutrition, food and agriculture counterparts in the country by the FAO-EU FIRST Policy Facility have led to the identification of specific capacity-development needs (FAO-EU, 2018). Some of the identified needs include integration of food security, agriculture and nutrition programming, coordination of nutrition actions, nutrition situation analysis and indicators for monitoring and evaluation, and sensitization on key approaches and tools to build resilience. To start addressing the identified gaps and challenges on nutrition, in line with the national policies and the SDG2-specific NFNSP 2019-2030, FAO has facilitated the development of a National Investment Plan for food and nutrition security and sustainable agriculture 2020-2022 (NIP) with relevant stakeholders in the country.

The development of the NIP (2020-2022) such that it improves nutrition and healthy diets analysed the following key supply and demand questions:

- I. How can the State of Palestine enable modern transformation of agriculture and food systems for improving accessibility, availability and stability of safe, diverse and nutritious foods?
- II. How can the State of Palestine enhance the national demand and consumption of healthy and sustainable diets to improve nutrition and well-being, with a focus on nutritionally vulnerable groups (*children under two years of age, pregnant and lactating women and adolescents*).

### **Results**

Nutrition activities in the National Investment Plan were designed such that they comply with available evidence on pathways which connect food and agriculture interventions with nutrition and draw from available guidance on mainstreaming nutrition in investment plans. For the purposes of the investment plan, three pathways were prioritized: (a) the production pathway, (b) income pathway and (c) women's empowerment pathway, with increasing attention placed to nutrition education. In addition, nutrition is mainstreamed in other components of the investment plan along the lines of available guidance on mainstreaming nutrition in agricultural investment plans.

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## Sustainability perception of local Extra Virgin Olive Oil and consumers' attitude: a new Italian perspective

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### 1. Introduction

In Italy, each region has its own behaviour on food, traditions, sustainability, and food production (Di Vita *et al.*, 2013). Especially for Extra Virgin Olive Oil (EVOO), the regional cultural identity is very important, even if it is widely considered one of the most important foods to improve health, and it is a pillar of the Mediterranean diet. The aim of this research is to analyse if the attitudes, habits, and behaviours about local EVOO, influence the opinion of consumers on the sustainability of its production, relatively to the three dimensions of sustainability (environmental, socio-cultural, and economic). In brief our research question is:

*RQ. Does consumption habits, purchase choice, and beliefs affect the consumers' opinion about:*

- a) The environmental sustainability of local Extra Virgin Olive Oil production?*
- b) The cultural and social sustainability of local Extra Virgin Olive Oil production?*
- c) The economic and ethical sustainability of local Extra Virgin Olive Oil production?*

EVOO it is one of the most traditional Italian products, and its local production creates a virtuous circle, both for social and economic sustainability (Menozzi, 2014). As Menozzi says in his paper,

economic conditions for sustainability refer to supporting viability of local economies, the capacity to improve producers' incomes and the quality of life. The local production and consumption thus become elements of sustainability, also due to the significance they have among consumer: the interest for the region, the tradition, and socio-economic welfare (Ilbery, B.; Maye, D., 2005; Galli, F., & Brunori, G., 2013). In fact, environmental sustainability is not the only concept on the basis of this issue, but cultural identity, food heritage, and rural integration are also taken into consideration (Forssell, S., & Lankoski, L., 2015; Hinrichs, C. C., 2000; Sage, C., 2003). In Italy, although Extra Virgin Olive Oil is perceived as a pillar of the traditional Italian diet, the convictions, knowledge and cultural background vary widely from region to region, and obviously from consumer to consumer. Therefore, our research tries to evaluate whether consumption habits and purchasing choices throughout the country would affect the opinion on the sustainability of local EVOO, in order to understand how this issues is perceived and faced by Italian consumers. This is important to evaluate how policies can be more useful for the development of sustainability and to strengthen local consumption of EVOO.

Past literature has addressed environmental issues (Cappelletti G., *et al.*, 2014), the relation between regional production and quality perception (Dekhili, S., & d'Hauteville, F., 2009), or social aspects and cultural issues related to the local production of olive oil and tourism (de Salvo, P., *et al.*, 2013). Regarding the Italian EVOO, most studies focus on the link between quality perception, sustainability and certifications (such as PDO and GI) (Di Vita, G., *et al.*, 2013; Menozzi, 2014). All these researches show that certifications and local production are linked to a perception of superior quality, creating a virtuous circle for sustainability. Our research moves in a different way, trying to evaluate how the behaviour and attitude towards EVOO affect the consumers' opinion about sustainability of this product and its production. In this work we will discuss all the declinations of sustainability (environmental, social, economic), for EVOO as well for other local products, with several considerations on consumers' purchase drivers for this product.

### 3. Methods

The data was collected through a questionnaire distributed throughout Italy, where consumers were asked about their purchasing habits for EVOO and their opinion on the three declinations of sustainability for its production. The collected data was analysed through a Logit model, using STATA software, in order to evaluate, given the behaviour, attitude, and purchase habits for EVOO, the probabilities of opinions on the three declinations of sustainability for this product and its production.



## 4. Results

Through the analysis of data collected, also due to the literature, we expected a relation between quality certifications and at least one declination of sustainability, and it is so. However, there are also interesting relations with purchasing habits, drivers, and attitudes towards major brand and private labels. These phenomena should be evaluated taking into account the Italian background about Extra Virgin Olive Oil.

## 5. Discussions and Conclusions

The results highlight several factors, which can be related to consumers' opinion on sustainability for local EVOO, and differ for each declination of sustainability. The implications of this information are especially political, because these can be useful for assessing how EVOO's local production can be developed, taking into account the opinion and attitude of consumers towards this product. In her paper, Sodano tries to shed light on which one of two divergent innovations process could contribute to increasing sustainability in the agri-food sector (Sodano, V., 2019). In her paper she states that there are two regimes: one driven by the innovation, based on agribusiness, and another guided by the trajectory of agro-ecology innovation. Sodano calls them: environmental-corporate food regime (ECFR) and agro-ecology food regime (AEFR). The former would maintain the power of the large corporations, retaining the characteristics of the neoliberal regime, modifying the structure, the firms' strategies and the power relations due to technological innovations. The second is tied to the socio-cultural aspect of sustainability, ensuring the right to local communities to decide of use of the natural resources from their territory. In her paper Sodano says (Sodano, V., 2019) (p.15): "The AEFR has the chance to succeed in contexts and conditions in which the concept of sustainability becomes deeply rooted in culture and society". Therefore, although this paradigm presents several weak points, it is worth studying consumers' interest for the sustainability of local food, because consumer opinion is one of the first drivers for the success of this paradigm, which could be one of the most important in Italy, considering its possibilities and the cultural background.

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## Paper title

Sustainable diets or fearful diets?

Trying to make sense of organic food consumption in a polluted world

### 1. Introduction

In most affluent societies around the globe, organic food is becoming a permanent feature of some people's shopping carts and kitchen cupboards (Willer and Lernoud 2019). This trend may be viewed positively if one considers organics to be a more sustainable form of agriculture than the resource-intensive one of the past seventy years (IAASTD 2009). The same could be said of the apparent spread of organic food values. However, these rosy assessments don't tell the whole picture. While the consumption of organic food began as an expression of environmental values (Belasco 2006), the relationship between the two has changed considerably over time, with organics expanding well beyond environmentalism (Reed 2010). This change has tracked the increased conventionalization of the organic food sector (Guthman 2004), but it has also come about as a result of new sensibilities toward the planet. Rather than protecting the environment from people's harmful actions, consuming organics today seems to be about protecting people from a harmful environment (Szasz 2007). Underlying this shift in perception is the acknowledgement that most of our surroundings are now irreversibly polluted, from those that produce the food we eat to those where we spend most of our time – our cities, workplaces, and even our homes (Curson and Clark 2004). As such, the phenomenon of organic food consumption may be seen as an expression of life on a "synthetic planet" (Casper 2003) and in a new "Anthropocene society" (Palsson et al. 2013). This paper reflects critically on these issues by drawing on ethnographic data collected in Italy.

### 2. Methods

The paper is based on ongoing ethnographic fieldwork carried out throughout Italy since 2006. The two main areas of research are Palermo in Sicily and Turin in Piedmont. Part of this fieldwork includes the use of more formal data-collection methods, such as household research, work in health food stores and on organic farms, and semi-structured interviews (carried out mostly with women, often married and with children).

### 3. Results

The paper argues that people who eat organic foods often do so to avoid food they consider "polluted" in a sense that is specific to the organic phenomenon.

### 4. Discussion and conclusions

Food "pollution" is usually interpreted either subjectively or objectively. In the former sense, substances that go against religious precepts, such as pork or cow meat, contaminate food. In the latter, substances that are scientifically proven to be harmful above certain thresholds, like agrochemical residues, dioxins and radionuclides, make food dangerous. From the perspective of the organic food phenomenon, however, polluted food is something different—it is nonorganic (conventional) food. This construct is a combination of the subjective and the objective. According to it, conventional food is polluted in at least three ways. First, it contains substances that are scientifically proven to be harmful, *regardless* of scientifically determined thresholds; second, substances over whose harmfulness there is still debate (e.g. glyphosate; GMOs); and third, it is the product of agricultural and commercial practices that violate non-religious moral choices, like genetic modification, oil-based farming, concentrated animal feeding operations, etc. Only this latter sense may be openly identified with a proactive strategy of caring, and thus classified as part of a sustainable diet. The other two illustrate instead a defensive attitude toward the environment that raises questions about what kind of vision can—and should—drive the expansion of organic food consumption, even when one considers it a form of implicit or "quiet" sustainability (Smith and Jehlička 2013).

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“What is a sustainable diet?”  
Insights from the study of collective food procurement networks

In this paper we wish to introduce first the framework and then some current research results from the *Food Citizens?* project (*Food Citizens? Collective Food Procurement in European Cities. Solidarity and diversity, skill and scale. ERC Consolidator project n. 724151*) and how it relates to investigations about “efforts across different contexts to change food consumption practices in sustainable directions” (in *Aims of the Conference*). Our contribution to the discussion consists in drawing links between styles of food procurement and diet, focusing on the collective dimension. Using ethnographic methods, the second part of the talk will present some context specific analysis and report from direct observation of civil society-led initiatives.

We problematize the question “what is a sustainable diet?”, first by contextualizing sustainability vis a vis lifestyles and styles of food provisioning within the comparative research framework of the *Food Citizens?* teamwork, then by drawing on preliminary findings of ethnographic research conducted in Turin during winter 2019 with two different collective food procurement networks (also named in the literature as “alternative food networks”). In both case studies, the methods employed are participant observation and semi-structured interviews.

The first case study is the *Gruppo di Acquisto Solidale - GAS - La Cavagnetta*, namely a “solidarity purchase group” (e.g. Grasseni, 2013; Forno *et al.*, 2015) gathering around 60 families. It is a well-structured association, with internal regulations and a directive board, and makes use of an online platform to facilitate communication and systematize orders and payments (Regolamento 8/4/2017). The second case study is the group *Food Not Bombs Augusta Taurinorum*, which, in line with the homonymous international movement, is a grassroots initiative promoting food recuperation, collective meal preparation and free distribution (Heynen, 2010). This group based in Turin, active since March 2016, is open to all and attendance is never compulsory. The free food distribution is particularly targeted to homeless people in the streets and in shelters.

We will discuss how the concept of sustainable diet emerged differently in the two groups. In the case of the *GAS*, two historical figures explained how different types of engagement of fellow members related to various visions of the *GAS*, sustainable food and solidarity. The two presented problematics linked to the lack of active participation of most families, who tended to distance themselves from *GAS* management and collective decision-making, “using the *GAS* as a quality food supermarket”, which jeopardized the continuation of the network. They also referred to the results of an internal questionnaire showing the many different criteria of quality and sustainability considered important by *GAS* members (Questionario sui criteri di scelta prodotti e fornitori, 2017). Within *Food not Bombs*, a sustainable diet was framed by one of the group coordinators in terms of social inclusion and right to food. For him, the organization of food-related activities involved the creation of a space and time of sociability, an encounter between citizens, and a dialogue with marginality. In material terms, sustainability lied in the recuperation of food leftovers otherwise wasted and the preparation

of vegetarian meals, which corresponded to a conditional sanitary constraint as well as a debated choice.

By illustrating how the concept of sustainable diet is understood differently within and across specific sub-cultures of food provisioning, we wish to draw broader conclusions about how these examples hold significance both content-wise and in methodological terms. They emphasize the many ways in which a diet is not only understood and practiced as consumption but also as a form of procurement and participation in collective endeavors. These situations also reveal different social, cultural and moral dimensions of the “sustainable diet”, which become visible in the ways groups members decide to enact such diet. Additional ethnographic research in this line can help to explore deeper these differences and shed light on the elements of the dominant food culture reproduced or altered. It is also functional to put forward into the sustainable diet debate matters of class distinction, urban transformation and marginality.

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## **The American University of Rome**

### **Conference**

#### **Sustainable Food Systems ↔ Sustainable Diets**

Rome, Friday, 11 October 2019

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#### **What food are we talking about?**

#### **Narratives of Mediterranean healthy and sustainable diet(s) confronting with cultural expectations, local food habits and gender feeding rules**

The patterns of Mediterranean Diet(s) proposed by nutritionists, based on results of Seven Countries Studies and validated within international research (Burlingame, Dernini, 2019), highlight the possibility to combine sustainability with the safeguard and the healthcare of a wide range of diseases caused by malnutrition. The diffusion of Mediterranean Diet might have the potentialities to face the worldwide pandemics of obesity and diabetes.

From a similar standpoint, in 2019 Lancet has proposed a set of methodologies for planetary healthy diets for all with the aim to achieve crucial goals in 2050. The priorities given to the components of food intake together with the recommended lifestyle are similar to those of the Modern Mediterranean Diet which aims at combining crucial changes in agricultural production with those of everyday patterns of consumption for individuals and social groups. “Regular physical activity, adequate rest, conviviality”, “culinary activity”, but also “biodiversity and seasonality, traditional and local and eco-friendly products” are recommended through the MD Healthy Pyramid: a visible synthesis of blindness mostly from a gender and class perspective.

Eating behaviour concerns the first form of education received by human beings and food habits remain a field of individual and collective identifications where hegemonic discourses are often conflicting with locally based values of food sovereignty, with diversities of practices and cultural interpretations of food.

We wonder if, how, and within what social groups, the changes considered desirable for all by scientists can be transferred into food habits and if the homogeneity of healthier patterns can be claimed for the wider population, that is, if they can combine with the social practices and cultural expectations of different generations, classes, genders and ethnic groups.

Our questions are similar to those presented by Margaret Mead in a seminal essay in 1943, following the experience of the National Research Council, Committee on Food Habits. At that time, USA Government needed suggestions for food policies related to a renewed “ideal American Diet”. This project should have been suitable for the American war economy and for food aids addressed to those countries which were suffering from deprivation after WW2. Mead underlined two main dimensions: food habits as crucial elements of cultural contexts and the diversities in expectations on changing them expressed by scientists, politicians and social groups.

Mead, as more recent research (Thoms, 2010), found that at the time Italian immigrants coming from the Southern Italy acted as defenders of their own cultural identity, also disseminating Mediterranean-type diets. Until then, the Italian-American eating habits have been considered unhealthy and culinary “barbarian”, given the prevalence of the raw on the cooked, of “herbs” and vegetables cooked with olive oil, and of “pasta” or no processed bread. Through his studies, Ancel Keys defined a path for a successful cultural transplantation of this “natural” food intake of poor farmers and fishermen living in some Mediterranean villages into a medical adequate diet to prevent cardio-circulatory risks of American white business men. He and his colleagues used that food intake, based on a backward rural economy, to define a durable International Index of Adequacy of the MD. At the same time they spread also a narrative of the “Mediterranean way” as a synthesis of sun, good life, happiness and natural adherence to a “sober life” that was very far from the factual experience of one of the most deprived parts of Italy. Immigrants from Calabria and Cilento escaped from those “virtues” that the doctors of MD took as a model. At home, those people were forced to have an “active life” and to eat with “moderation”, fuelling the endless fatigue in overcoming hunger and undernutrition that put at risk mainly women’s reproductive life and children’s survival.

Today MD, as a set of medical and social recommendations, presents multifaceted narratives. Its cultural profile as a standardised healthy diet available for all and sustainable everywhere is mainly convergent with the expectations and economic possibilities for an healthy lifestyle of the urban middle classes with sophisticated cultural capitals, thus representing in part an hegemonic normative discourse. Furthermore, some alter-hegemonic narratives also interpret MD as a perspective for eco-friendly projects, combining ethical production, biological food consumption and healthy eating habits.

Coming to cooking practices, we have to consider, beyond the recognised importance of Mediterranean Diet defined by nutritionists, also the international success of the diverse Mediterranean cuisines. During the time, they became ambiguous symbols of old traditions of “good” taste and new models of social distinction, acting in the conflicting field between unhealthy South European rich gastronomy and the new MD obligations for healthy food habits.

The question *What food are we talking about?* aims at shifting the reflection on the relationship between healthy diets and sustainability to everyday life, focusing on food choices, on the cooking ways and on feeding and eating practices, alone or together, around the table.



In the Mediterranean area everyday food is still assigned mostly to women's choices, transformation and presentation, despite the rapid changes in contemporary family models. In women's everyday culinary practices we can find a difficult research for the combination between the individualization of family's taste, cooking habits and the new health expectations.

One of the two Authors of this paper, who is suffering of a widespread chronic disease (Bimbi, 2016), made an auto-ethnographic account with a group of women on their daily search for the re-conciliation between the deep demands for the personal "illness work" and the biographical redefinition, till the possible translation of a (medical) Mediterranean diet into a good Med-Italian cuisine.

The second Author underlines in her research within two primary schools how the education system could promote a negotiation with families for the re-orientation of children's diets, enacted through a valorisation of the Italian MD and the culinary cultural capitals of immigrant families (Storato, 2017).

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## **Towards EU Sustainable Dietary Guidelines to promote health and sustainable diets**

### ***Quality schemes in the modern approach of EU Food Law: A new comprehensive food labelling and a renewed role of geographical indications***

*Key words: Sustainable diets, EU Food Law, Geographical Indications, Food Labels, Consumer Choices and Protection*

#### **1. Introduction**

On 20/02/2019 – the European and Economic Social Committee adopted the document titled ‘Promoting healthy and sustainable diets in the EU’.<sup>1</sup>

In spite of being an opinion which demands further legal binding documents, it provides indication on the way the EU should approach sustainable diets by addressing many benefits of this new approach to food that will impact not only EU consumers.

The topic is relatively new as a comprehensive discussion over food diets has never been of primary importance but mostly tackled as a cross-cutting issue.

In order to better understand the reasons behind this late shift, it is necessary to go back to examine the historical origins of EU Food and the analysis will concentrate on the nexus food-culture and legislative implementations which should be majorly investigated by the dominant EU doctrine.

The EU legislator has been concerned during times about several threats and tried to reconcile diverse values: from preventing epidemics, to sustaining consumer protection, to the current trend of fostering sustainability. EU legislation over food has assumed multiple aspects adapting to new circumstances that have been highly influenced by politics but also by a need to respond to modern developments like consumer’s demands and a new globalised market. This article while showing the historical evolution of EU Food Law, intends to analyse some potential elements to be considered in the years to come which could impact on people’s life and diets. A particular focus will be dedicated by the role that will play the new labelling system and quality schemes among which the renewed role of agro-food geographical indications through the recent EU Parliament Resolution to adopt the Geneva Act.<sup>2</sup>

<sup>1</sup> EESC Opinion NAT/755-EESC-2018-04568 available at <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/promoting-healthy-and-sustainable-diets-eu-own-initiative-opinion>.

<sup>2</sup> European Parliament legislative resolution of 16 April 2019 on the draft Council decision on the accession of the European Union to the Geneva Act of the Lisbon Agreement on Appellations of Origin and Geographical Indications (06929/2019 – C8-0133/2019 – 2018/0214(NLE))

## **2. Methodology**

Most data were collected through an in depth analysis of past EU Food Laws, and current food trends. Legal EU documents were examined in the light of showing the progress made towards a more sustainable food system which takes into account not only consumer's health and trade standards but also values like environmental and social responsibility which should drive consumer's choices.

The literature used includes respectful opinion over specific topics in EU food law, labelling system and geographical indications.

The presentation will examine the historical development of Food Law in the EU to highlight how regulative mechanisms have been influenced by the necessity of protecting different values during times and how sustainability also in diets becomes a theme of modern times and a necessity of a globalised society.

## **3. Results.**

### **Quality schemes: food labels and geographical indications**

#### *i) Food labels*

The Dietary Guidelines which should be adopted by the EU in the next couple of years should be based on international standards but also on a specific EU approach regarding the role that consumer should play in responsibly participating in dietary regimes. A specific role will be played by the EU Food Label, which will be based on rules of transparency, providing all information that will discourage the consumption of 'unnecessarily cheap raw materials unhealthy and unsustainable (e.g. trans fats, palm oil and excess sugars).' - EESC Opinion.

The labelling system will also include all information, which are currently not compulsory such as environmental standards and social aspects.

#### *ii) Geographical indications*

The protection of geographical indications is a clear example of this new trend. By addressing quality and not only production, the EU provides an answer not only to that necessary diversification of rural economies - that is fundamental to sustain even the most marginalized rural areas – but it meets a new demand from EU consumer market.

Consumers and farmers become closely connected and majorly influenced by each others actions. This aspect is also promoting a renewed symbolic value attached to food.

Food can become a cultural patrimony as many authors have proven the fundamental identity character that links people with the agro-food products of their territory.

Furthermore, diverse historical and ethnographical perspectives have studied the identity connection of some food items. Some food roots and traditions are developed across centuries, which turned some agro food in integrated totem of local diet. Some of them have been accorded a special protection by the existing European legal mechanism of geographical indication. This 'special' food items contribute to the identification and connotation of products: linkages with the territory but also with cultural knowledge and traditions of people inhabiting the territory of production of the food item, independently from being or not being the producers. Geographical indications are a case study for a better comprehension of cultural and traditional values attached to some agro-food items and the current trend of EU Food policy.

#### **4. Discussion**

##### **Shifting perspectives: EU Food Law from only safety to accountability and sustainability**

Going back to the roots of a common universal history, food was probably one of the first items to be regulated and what to eat or not to eat was disciplined in very early times. As Catonis recalls in his *De Rustica*, some rules established to discipline food adulteration,<sup>3</sup> and this signifies that the theme has always deemed as relevant and crucial.

A new concept of what can be a modern system of food laws was born in the twentieth century in the EU but also in the US with the necessity of responding to high costs generated in the health system by the scandals in the meat packing and food processing industries.<sup>4</sup>

Although a different history accompanies the evolution of the United States food laws, today more than yesterday there are commonalities that unite EU-US countries in particular in a new expanded concept of modern food laws and a collective responsibility.

The harmonisation of EU food law is due to a complex historical evolution on how EU authorities have interpreted food crises, preventive health measures, and industries interests.

Past epidemics came mostly from the supply chain in the meat industry and there was a need of major controls of the borders of the EU and within the EU members itself. Since its creation, EEC found the matter of food and agriculture being of a supranational competence.

<sup>3</sup> M. Catonis in his *De Re Rustica Capitula CIV-CXXV*, 111 provides an example for determining watered wine. Some references on animal health and consumer welfare were also present, see Catonis *Capitula LXX-LXXIII*.

<sup>4</sup> Sinclair U., *The Jungle* (New York: Doubleday, 1906. in which the author describes the abuses in the meatpacking plants in Chicago.

It is worth underlying that the roots of EU trade policy on food and EU food law coincides: they both lay under Art. 36 of the EEC Treaty where member countries are allowed to restrict imports in order to protect the life of their human, animal, and plant populations.<sup>5</sup>

The creation of an integrated internal EU market without barriers for food products was the main concern underlying the EU legislator's first attempts to cover the subject area with the most organized system without neglecting the needs of the EU consumers to be protected against counterfeiting of frauds and food adulteration.<sup>6</sup>

Originally meant to regulate an internal market for food products,<sup>7</sup> after the 1990s' E.coli outbreak in the United States and the BSE scandal of the late 1990s in the United Kingdom, the EU authorities became more concerned with consumer protection and the sanitary aspect of it.<sup>8</sup>

## 5. Conclusion

Historical development in the way EU approached the thematic of food regulation are approached with the intent of capturing the shift from a mere safety orientation to comprehend new approaches as consumer satisfaction on quality production, sustainable value chains, and more universal international trade standards. All these directions have directly impacted on people diets during times.

The analysis shows the simplicity of an early system born out of emergency crises to a more complex bundle of regulations where food safety is interlinked with consumer protection, with a significant role played by the labelling and quality schemes laws.

Through the years many EU regulations have helped to better point in the direction where the EU legislator meant to go: new effective laws able to comply with the introduction of new important values that bet on quality production over quantity which means primarily respect of values like environmental and suitable practises, safeguarding territories and local diets. The introduction of participatory approaches based on transparency of information over food content has been demonstrated to be effective.

<sup>5</sup> See Skogstad G., *The WTO and Food Safety Regulatory Policy Innovation in the European Union*. JCMS: Journal of Common Market Studies, 2002 at 297.

<sup>6</sup> Council Resolution of 28 May 1969 on the adaptation to technical progress of the Directives for the elimination of technical barriers to trade which result from disparities between the provisions laid down by Law, Regulation or Administrative Action in Member States.

<sup>7</sup> See Van der Meulen, B., and M. van der Velde. (2008). *European Food Law Handbook*. Wageningen: Wageningen Academic Publishers. See also Alemanno, A. (2006). 'Food Safety and the Single European Market', in C. Ansell and D. Vogel (eds.), *What's the Beef? The Contested Governance of European Food Safety*. Cambridge, MA.: MIT Press, 237–58.

<sup>8</sup> White Paper *Action Plan on Food Safety*, 1999 ;

The direction is taken towards a more comprehensive ‘collective’ system where each stakeholders play an important role: the farmer, the consumer, the distributor, quality schemes associations.

To consumers is given the possibility to be informed through a new mechanism offered by the recent EU labelling policy, which is not describing only the origin of the product but also some important new components that can affect positively or negatively consumers’ health but also on consumer’s sustainable choices.

Sustainable food choices are expressed in EU food quality schemes and include environmental and social responsibility for a conscious consumer choice.

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# **Institutional food procurement for sustainable diets and food systems: A policy instrument that benefits all**

**Swensson, L.F.J., Tartanac, F., Hunter, D.**

## **Introduction**

In the last decade various countries, regions and cities from low-income to high-income economies have been developing institutional food procurement programmes (IFPP) aimed at building direct linkage between public demand for food and local and smallholder agriculture production. Examples include efforts to link local food production especially to national school feeding programmes (i.e. home-grown school feeding - HGSF), but also linkages to strategic food reserves and broader food security programmes (Kelly & Swensson, 2017).

Despite an increasing number of studies across different areas exploring various benefits and beneficiaries that IFPP has the potential to achieve, the multifaceted nature of these programmes seems not be fully explored yet, neither by policy makers, nor by the literature. In the field of rural development in particular, the focus has often been on a single beneficiary (i.e. local farmers) and on specific benefits, frequently household income.

Building on the existing literature from different disciplines of knowledge and country experiences, this paper argues that IFPP present a multifaceted policy instrument with the potential to deliver multiple benefits to multiple beneficiaries that goes beyond food suppliers, to contribute to various development outcomes including more sustainable diets and food systems. It also argues that this multifaceted nature of IFPP still needs to be further developed.

## **Multiple beneficiaries and benefits**

One of the primary recognized objectives of IFPP is to support local and smallholder food producers through the provision of new, stable and predictable market opportunities (Kelly and Swensson, 2017). The rationale behind these programmes is that connecting large and predictable sources of demand for agricultural products from smallholder farmers can reduce uncertainty associated with producers' engagement with markets and investment risks. This may encourage investment, improve quality and production diversity, leading to higher and steadier incomes and ultimately, improved livelihoods (FAO & WFP, 2018).

Nevertheless, IFPP can also constitute an important market opportunity for other actors in the value chain, including small-scale traders, food vendors, small processors and, food-based small and medium-sized enterprises (SMEs) (FAO & WFP, 2018). Kelly & Swensson (2017) for instance report how under certain conditions IFPP can be a valuable instrument to also support small-scale traders that – according to the context – are poor and vulnerable rural actors. IFPP can also constitutes an important market opportunity for SMEs, which may supply schools with nutritious processed food products as reported in the cases of Brazil and India (FAO & WFP, 2018). In addition, IFPP also provides the opportunity for government to target and support specific vulnerable groups of producers, including indigenous peoples, member of traditional communities, youth as well as women (FAO & WFP, 2018).

The beneficiaries of IFPP however do not include only suppliers. There is an increasing literature which demonstrates the indirect benefits that IFPP has on the potential to bring benefits to the wider community and environment. These benefits are based on the capacity of IFPP, by creating a demand for certain type of products (such as local, diverse food, from local and smallholder production and/or from environmental and biodiversity attuned practices), to influence both production and consumption patterns and promote changes that may contribute to more sustainable diets and food systems (De Schutter, 2014; Foodlinks, 2013; IPES, 2016; Tartanac et al, 2019). Tartanac et al (2019) classify these multiple benefits into three main areas linked to the pillars of sustainability: (i) Nutritional and health benefits; (ii) social and economic benefits; (iii) environmental benefits.

### **Discussion and conclusion**

Considering changes in public perceptions on the choice of what food to purchase, IFPP has been assessed as a powerful instrument to increase the overall demand for more healthy, nutritious and diverse products and to stimulate smallholders to produce more local and biodiverse crops (Biodiversity International, 2016; IPES, 2016). Increased diversified production has been assessed as the most common and significant effect of the Brazilian IFPPs (Sambuichi et al, 2013) leading to an increase in household consumption of diversified and nutritious food, as well as to an increase of the availability of these products in local markets, contributing to dietary diversity and nutritious status also of the wider population (Valencia et al, 2019).

Regarding social and economic outcomes, IFPP has been assessed to have the potential not only to contribute to smallholder livelihoods and food security but also to generate important indirect economic benefits for the wider community. A recent study conducted by the University of California, WFP and Kenya's government on the impact of HGSF demonstrates large income multipliers in rural Kenya. According to this study, each shilling transferred to the IFPP created an additional 1.27 KSH income to the community with an increase of up to 38% in the simulated case of expansion of 10% of the food basket (Taylor, 2019).

IFPP can also target food that is produced in a specific way, and, therefore, use public purchasing power to support and promote forms of agricultural production that ensure environmental sustainability e.g. organic agriculture or agroecology. These programmes have been recognized with great potential to positively influence water and land use, climate change and promotion and sustainable use of biodiversity (Foodlinks, 2013; Valencia et al, 2019).

Nevertheless, despite an increasing number of studies exploring distinct potential benefits of IFPP across the three pillars of sustainability, there is still the need for a more comprehensive and holistic approach. There is a need for more research, stronger dialogue among the literature of different areas of knowledge and impact evaluation methodologies that take into consideration and provide further evidences on the multiple effects of IFPP as well as key enablers and constraints. This is important to support better evidence-based policies and improved outcomes.

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## **Food Service Training to Create Sustainable and Food Secure School Food Systems.**

Abstract:

**1. Introduction.** Food waste is a major issue in the United States. The United States Department of Agriculture (USDA) estimates that 30-40% of the food produced in the United States is wasted. In 2010, the USDA estimated that there was 133 billion pounds and \$161 billion worth of food waste in the United States (NRDC, 2017). In addition to the economic cost of food waste, food waste also has a serious environmental cost. The resources used to produce food such as land, water and transport are not often factored into the cost of food waste (NRDC, 2017). Moreover, food waste is one of the leading emitters of methane in the world (NRDC, 2017). Methane is a greenhouse gas more potent than carbon dioxide. The dangers in food waste are both environmental and economic and the federal government has started working on tackling this issue (NRDC, 2017). In 2015, the USDA created a Food Waste Challenge jointly with the Environmental Protection Agency (EPA) in hopes to make an impact on food waste nationally. This Food Waste Challenge intends to bring to light the issue of food waste and start working on improving agricultural, manufacturer and consumer behaviors to reduce food waste. Large food service operations can be leveraged to improve food waste nationally. The Food Waste Challenge targets schools as a priority sector to reduce food waste due to their scale, with special emphasis on schools who receive funding from USDA through the National Lunch Program. Many of the studies on food waste in schools have assessed the amount of food waste in a particular school with food waste ranging from 26% (Byker et al., 2014) to 45% (Spiker et al., 2017) of food served. The National School Lunch Program provides free and reduced meals to over 3 million low-income children a day (Cohen et al., 2014). Additionally, studies on food service training have assessed the impact of the training on implementation of strategies but not on student behaviors. (Bean, 2019) The objective of this study is to assess the effectiveness of a food service training program on food waste in a Northeastern, low-income school district.

### **2. Methods.**

The district is located in a midsize city in northern New Jersey. The district serves 25,010 students from very diverse backgrounds.

The school district used for this intervention has a total of 46 schools, of which 30 were elementary and middle schools that prepare their meals on site and thus met the study inclusion criteria. A random sample of 15 schools were selected of the 30 eligible schools to participate in the study. The schools selected varied in total enrollment, with enrollment ranging from 138 students to 857 students.

Baseline food waste data were collected at two time points in each school in the month prior to the intervention training (from February 2017 until March 2017). Post-intervention food waste was measured at two time points in each school approximately four weeks after the training, in April 2017.

This training introduced the issue of food waste in America, provided a snapshot of food waste observed in the schools (as collected during a pre-intervention baseline assessment) and described the Smarter Lunchrooms Movement techniques that can be employed to reduce food waste in schools. The Smarter Lunchroom Movements training was based on behavioral economics “nudges” to improve the cafeteria environment which led to reduced food waste. The training included best practices to implementing low-cost or no-cost changes to the lunchroom. Changes included, offering multiple fruits and vegetables, retraining on the requirements of a reimbursable meal, providing condiments with the meal, and promoting taste testing of new foods.

### 3. Results.

Of the food and beverages served during our 60 visits to schools 2,473 pounds were wasted before the intervention and 2,123 were wasted after the intervention. Overall, 350 pounds of food was saved which was a 14 % reduction in food waste due to this intervention. That is approximately 12 pounds of waste saved per school per day and a total of 90,720 pounds of food waste saved for the whole district for the year. The estimated savings of food cost for the 90,620 pounds of food is \$76,452. Overall, the intervention showed the impact of a food service training program on reducing food waste. See food waste changes in table 1.

| Table 1: Data Collection from Food Waste Study |                                                                                                                                                                             |                                                                                                                                                                             |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | Baseline Food Waste                                                                                                                                                         | Food Waste Post Intervention                                                                                                                                                |
|                                                | <p>530 pounds of waste (Fruits)<br/>570 pounds of waste (Vegetables)<br/>902 pounds of waste (Dairy)<br/>471 pounds of waste (Grains)<br/>471 pounds of waste (Protein)</p> | <p>380 pounds of waste (Fruits)<br/>490 pounds of waste (Vegetables)<br/>804 pounds of waste (Dairy)<br/>449 pounds of waste (Grains)<br/>449 pounds of waste (Protein)</p> |
| <b>Total</b>                                   | <b>2,471 pounds</b>                                                                                                                                                         | <b>2,125 pounds</b>                                                                                                                                                         |
|                                                | <b>Total Saved</b>                                                                                                                                                          | <b>346 pounds</b>                                                                                                                                                           |

According to the data the food components with the most significant food waste reduction were the fruit, vegetable and milk components. See table 2 for a description of the food components baseline and post-intervention measurements.

| Table 2: Food Waste Per Food Component |                              |                         |                            |                         |                         |                            |             |         |
|----------------------------------------|------------------------------|-------------------------|----------------------------|-------------------------|-------------------------|----------------------------|-------------|---------|
| Food Component                         | Mean Baseline Measures Day 1 | Baseline Measures Day 2 | Average Baseline Measures  | Post-Intervention Day 1 | Post-Intervention Day 2 | Average Post-Intervention  | Pearson's R | p-value |
| Fruit                                  | 3.49 oz<br>±2.042            | 2.85 oz<br>± 2.258      | <b>3.15 oz<br/>± 2.182</b> | 2.12 oz ±<br>2.132      | 2.30 oz ±<br>2.149      | <b>2.21 oz ±<br/>2.143</b> | -0.212      | 0.000   |
| Vegetable                              | 2.60oz±<br>1.447             | 2.64 oz<br>± 1.664      | <b>2.62 oz<br/>± 1.560</b> | 1.90 oz ±<br>1.602      | 1.87 oz ±<br>1.391      | <b>1.88 oz ±<br/>1.498</b> | -0.233      | 0.000   |
| Grain+ Protein                         | 1.23oz<br>±1.532             | 2.02 oz<br>± 2.203      | <b>1.64 oz ±<br/>1.946</b> | 1.55 oz ±<br>1.820      | 1.59 oz ±<br>1.860      | <b>1.57 oz ±<br/>1.840</b> | -0.018      | 0.089   |

|      |                   |                    |                            |                    |                    |                            |        |       |
|------|-------------------|--------------------|----------------------------|--------------------|--------------------|----------------------------|--------|-------|
| Milk | 4.55 oz<br>±3.739 | 4.03 oz<br>± 3.713 | <b>4.26 oz ±<br/>3.733</b> | 3.90 oz ±<br>3.782 | 3.82 oz ±<br>3.745 | <b>3.86 oz ±<br/>3.763</b> | -0.054 | 0.000 |
|------|-------------------|--------------------|----------------------------|--------------------|--------------------|----------------------------|--------|-------|

#### 4. Discussion and Conclusions.

Overall, the intervention showed the impact of a food service training program on reducing food waste. The effect of the training was most significant for fruit, vegetable, and milk waste. One of the limitations was that the study only measured plate/tray waste and did not include production waste. Additionally, trainings on food waste should be expanded to different school audiences including but not limited to administrators, teachers, and students.

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There is growing interest among colleges and universities in providing more fresh, regional, and local food to campus communities. This interest is driven by a number of factors including stakeholder demands for more sustainable food such as lowering food miles and lessening campus dining's carbon footprint and national conversations on health linkages with the consequences of diets based on ultra-processed food. More and more these days, having a truly fresh, regionally sourced meal on campus is perceived as enhancing, and demonstrating, the priority of "the student experience" on university campuses. In the challenge to recruit students amidst declining demographics and rising consternation over the worth and value of higher education, campus dining is increasingly viewed as a wedge issue to attract and retain students.

Against this backdrop of national campus concern with sustainable local food, recent research findings funded through the Board of Governors of the Federal Reserve System and the Federal Reserve of Bank of St. Louis, and published in the 2015 *Harvesting Opportunity: The Power of Regional Food System Investments to Transform Communities*, indicate that institutional purchasing is the strongest, surest, most sustainable way to grow a regional food system. Universities, K-12 school systems, hospitals and prisons are described as entities with the purchasing powers to shape, for better or worse, food systems across the United States.

This presentation discusses an on-going case study on how institutional food purchasing can strengthen a regional food system. Specifically, the research that will be presented documents how Ohio University (OHIO), a higher education institution with a student body of over 29,000 situated in Athens, Ohio, through faculty and student engagement and partnerships with local not-for-profits, is attempting to use food procurement to improve its sustainability metrics and

grow food production capacity in its region.

This case study addresses the feasibility of using sustainability's triple-bottom line purchasing analysis in a university's institutional food procurement setting. It also examines the tensions inherent in aligning a public university's academic objectives and social mission and the profit-driven campus dining units. It investigates the role of student advocacy efforts in driving more sustainable and local food choices on campus. The case study also examines how the agricultural production capacity to meet institutional food procurement needs can be encouraged and supported by institutions. Employing the tools of qualitative analysis, the case study charts how significant changes in perceptions regarding campus dining and procurement processes governing purchasing produce are necessary in order to incorporate regional, local food into institutional food systems.

OHIO, the site of the case study, was founded in 1804. The university is in southeastern Appalachian Ohio, an area beset by food insecurity and environmental and social devastation from generational poverty and consequences of extractive industries such as coal, timber, and hydraulic fracturing. The university is the region's major employer and serves four million campus meals yearly. OHIO prides itself on its commitment to "local food." Its definition of "local" is food procured within 250 miles and/or the state of Ohio. In effect, this means that "local" campus food can be from as far away as Canada.

The case study examines the results of the university's Farm to OHIO Working Group (FOWG). The FOWG is an initiative working to mobilize support for institutional food procurement change at Ohio University. Established in Fall 2018 with membership from campus culinary units' senior staff, senior sustainability staff, student leadership, food producers and local food focused not-for-profit organizations, the FOWG set out an ambitious set of year one goals: a) map out

steps and hurdles for regional food producers to sell to OHIO; b) develop a procurement toolkit for small food producers to enter the OHIO food system; and c) refine the university definition of “local” purchasing. The FOWG also set specific university purchasing goals for the 2019 summer growing season and the presentation will include data on that purchasing.

This case study relates how the existing community and campus assets of a robust local food system, a diverse range of farmers and food producers, nonprofit advocates and specialists, OHIO’s strong food processing infrastructure and buying power, and forward thinking university leadership were harnessed together to address the region’s economic and social needs and create a more sustainable institutional food system. Along with the benefits to the university in terms of its sustainability goals and in terms of providing local food offerings for students, the university’s commitment to local food procurement is providing rationale for investments to grow the capacity to supply the university. These investments will foster agricultural and community resilience in the face of Southeast Ohio’s slow economic growth and multi-generational poverty.

In fact, recent research has pointed out that the current food system in Ohio does not function to provide for locally accessible foods nor is it developing the farming capacity needed to feed the population. Strengthening food systems in Ohio should be of highest concern at the policy level. The 2011 study, funded by the University of Toledo (Meter 2011) and titled *Ohio Food Systems—Farms at the Heart of it All*, unequivocally points to the urgent need to grow farming capacity in the state and to invest in sustainability to create resilient food systems. This particular research study also stresses investment in building “relationships of trust” among food producers. In the context of the case study, the FOWG aims to weave a connective web between OHIO’s Culinary Services staff and local farmers creating “relationships of trust” to benefit the whole region.

The FOWG case study demonstrates how a university can be an agent for growth in reviving a regional economy's historical strength in small, diversified agriculture. The case study further demonstrates that by enhancing the sustainability of its food system through local procurement, an institution can better serve its customer base and reap additional benefits in terms of community relations while fostering a larger discussion about the value of local food.





TITLE:

**Food Security and Sustainable Diets, Formal and No-Formal Education in Campus: current perceptions and future challenges.**

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Abstract

Sustainable development implies the recognition that everything is interconnected and different stakeholders need to bring about the same vision in order to create truly sustainable outcomes (Ukaga et al., 2010). This is valid especially in the case of the sustainability of the food system, which includes all those activities (production, processing, access, distribution, consumption and waste management) necessary to bring food to the table and dispose of it, as well as their interactions and outcomes (Kaufman, 2004; Ericksen, 2008). The complexity and at the same time the relevance of the food system make it a core element in the transition towards a more sustainable future, also in relation to education, especially in the context of projected growing population and climate change, which shape our most pressing societal challenges.

In this conference we would like to show and discuss the results obtained from one of our research on higher education and sustainable diets and introduce new aspects concerning the education of young people on sustainability issues. In particular we are interested in sharing with the conference audience those that today can be interesting elements of non-formal education, which can have a strong impact on the behavior of future adults.

About our research on higher education and sustainable diets. We aimed to explore how higher education and on-campus food services can contribute to shaping students' eating behaviour and critical thinking towards their food choices, and provide critical food guidance towards a more sustainable diet and food system. The focus of our work is an attempt to understand how the current on-campus food related services (from dining services to vertical gardens) may impact on the students' awareness and on food sustainability education. In this paper we would like to define the food education transferred indirectly through such services as "non-formal food system education". This is different from "formal education", that is the sort of teaching and learning which takes place usually in a classroom (such as through seminars, lab exercises, and frontal lectures), or that which happens in less conventional ways (such as in workshops, educational field trips and other experiential learning activities; Allievi, Dentoni and Antonelli, 2018).

Through a survey submitted to the international students members of the Alumni Association of the Barilla Center for Food and Nutrition (BCFN) Foundation, we were able to gather some interesting data that allowed us to carry out research on the relationship between formal and non-formal food system education in campuses from different geographical regions of the world, focusing on its role in shaping students' values and behaviours, and its effect as critical food guidance.

We conclude this paper by providing a section on Food Guidance for Sustainable Food on Campuses. Starting from a set of positive examples presented by the survey respondents, we have created a list of 10 heuristics that, if applied in campuses around the world, have the potential of actually making a difference in the path towards more sustainable diets and food systems.

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## Presentation of project – RENASCENCE: The Role of European National Health Services in the Enhancement of Sustainable Food Systems

**Introduction:** The European food systems are unsustainable, within a Europe confronting increased environmental degradation, diet related diseases and inequality. Evidence points to health-care systems as main drivers for societal changes towards sustainable food systems, as they are involved in food procurement and have a strong educative role. European hospitals have more than 2.5 million beds, 6.5% of them being for long stays.

Scarce scientific literature exists on food policies of health services. While several public reports and guides have been written on sustainable public procurement, there has been negligible focus on hospitals public procurement. Alongside sustainable procurement strategies, the need to switch from a classical nutrient adequate diet into a sustainable healthy diet is essential, but policies are still undeveloped in that area within the health services.

If sustainable food policies (concerning food procurement and education) were embedded in hospital functioning, several of the UN 2030 agenda's sustainable development goals would be achieved (specifically goals 2 and 12, with direct impact on goals 3, 8 and 11). However, the guidelines, strategies and public policies on sustainable food systems are scarce, underdeveloped and are not executed adequately nor uniformly across European hospitals.

In this communication we present RENASCENCE, a project that recently began its path, which objective is to identify and analyse from a sustainable dimension the food system processes related with the commercialisation channels (procurement) and educative channels (health/diet promotion) of the European health services and from this knowledge, propose a System of Indicators (SOI) that will permit development of strategies for the food systems in place.

**Methods:** The methodology is based on qualitative research, within a process of co-generation of the first SOI on food systems specific to health services, as well as evaluate its empirical value. A transdisciplinary approach with a core on Participatory Action Research (PAR) will be used, through deductive and inductive processes, making the methodology of this proposal a unique process for the co-generation of the SOI.

Firstly, a systematic review will map the European Health Services educative and procurement policies leading to a primary diagnosis of the situation. It will continue with the (co-)generation process of the System of Indicators, through focus groups with experts, to delve further in that primary diagnosis, in order to obtain the objectives that will be used for the development of the first draft of the SOI using the *Principles, Criteria & Indicators theory* as a base. Afterwards, a DELPHI analysis and panel of experts, will lead to the theoretical validation of the System of Indicators. A practical phase will finalise the validation of the System of Indicators against real cases to assess its empirical value.

**Results:** The project is on its first steps; future results are on their way. At present the systematic review process is ongoing. However, the expected results of this project include a knowledge in food processes related to food procurement and diet advice in European Health services. That information will lead us to the development of a tool in the form of a system of indicators that will aid in the decision making of the European health services within the food procurement and diet advice processes towards sustainable means.

**Discussion:** Many European countries are failing to fulfil their national targets for climate change, obesity rates, equality targets and the list keeps piling up. New policies, targets and strategies are developed

with poor success. In this moment of Climate Urgency, and with barely 10 more years to fulfil the UN targets, instruments need to be found that will aid to implement the policies efficiently and effectively. Tools that will help in the development of strategies, with realistic and tangible steps, in order to start making changes from the foundations and not the roof. The project RENASCENCE aims to develop such a tool, a System of Indicators exclusive for health services that will aid them into the obtention of different policy targets from the foundations.

RENASCENCE is in its initial phase, and yet we are gathering results. However, in a matter of utmost importance such as Sustainable Food Systems and Sustainable Diets; and bearing in mind the PAR nature of this projects, the research team acknowledges the importance to present this short communication in order to make visible the project, and invite to those interested to participate in it.

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**Examining the Role of Board Governance Education on Food Security and the Right to  
Food in Vancouver's Downtown Eastside**

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June 21<sup>st</sup> 2019

In Vancouver, Canada, there is a neighbourhood plagued by mental health illnesses, open drug use, survival sex work, high poverty rates, homelessness/unstable housing, high instances of bloodborne illnesses and rampant food insecurity- the Downtown Eastside (DTES). Media sources often focus on these aspects as a perverse peep show without reporting on the most valuable commodity in the neighbourhood, namely, the community and its cohesion. The Downtown Eastside has been instrumental in activist movements in Canada such as the feminist movement, Indigenous rights movement, and safe injection site procurement in North America. Neighbours love the area and their community members, often volunteering with social services in the neighbourhood and receiving trainings that could improve their quality of life.

One social service provisioner that provides trainings to the community is the Downtown Eastside Neighbourhood House (DTES NH). The ethos of the neighbourhood house is centred around the Right to Food, which is not a legally recognized nor enforceable right in Canada. Fresh, non-processed food, that is culturally diverse and served in a dignified space is crucial to the programming at the DTES NH. According to community members, this is why they feel safe, respected and comfortable here.

During trainings, community members have expressed frustration to the DTES NH with talking about solutions, strategies and activities to improve life in the Downtown Eastside but never actually implementing anything. From this sentiment, a truly community-led research project was born. Community members who are engaged with a capacity building education program at the DTES NH wanted to know why other members in the neighbourhood do not access some of

the services in the area, such as shelters, food programs and other social services. They wanted to know what the barriers to access for these people were.

We know that low income is a significant predictor for food insecurity and one of the reasons it is so high in the DTES. Enabling neighbours to learn skills that could be used to find employment could prove to be very useful. So, myself and the programming director organized trainings for community members to be versed in research methods so that they could undertake focus groups with their neighbours themselves, rather than us doing that work. This enables them to learn a valuable skill and also apply it in a meaningful way.

My research focuses on how participants (i.e. community researchers) in the program feel that the skills they have learned throughout the capacity building trainings and research with their peers has impacted their Right to Food, food sovereignty or food security. Capacity building is a relatively new area of focus in impoverished communities in Canada, which relies heavily on charity food models to combat food insecurity.

Participatory action research (PAR) will be used as the qualitative research method in this project. PAR attempts to balance power dynamics within research by allowing both participants and researchers to learn from one another (McIntyre 2007). Recognizing multiple, subjective realities as valid and important to research are central to PAR (MacDonald 2012). Additionally, PAR rejects prescriptive research methods, instead it “provides opportunities for codeveloping processes with people rather than for people (McIntyre 2007).” Accepting that researchers projects are inherently influenced by their own experiences and humanity is a crucial part of



PAR; assuming that the researcher is objective in the research is rejected (Kemmis, McTaggart & Nixon 2013). In order to understand and intervene with the researcher's own self-interest, critical self-reflection is an extremely important aspect of PAR (Kemmis, McTaggart & Nixon 2013).

Semi-structured interviews will be undertaken with program participants in order to understand their experiences trying to build their own capacity while understanding their neighbours barriers to accessing social services. Questions will attempt to elicit how a community member feels that these new skills have helped them with food insecurity. Do community members feel more qualified to apply to jobs? Do they have better knowledge about their community members' struggles or community programming? I expect to wrap up my interviews by mid-August and will have the initial analysis finished by early September.

This research project has implications for policies which seek to address food security in communities which face multiple, complex social obstacles in an urban setting. We have clearly seen in Canada that relying on donations and charity models for providing food do not work in improving rates of food insecurity; empowering communities to take their food systems into their own hands is crucial to solving this problem. Perhaps capacity building education could be an avenue for this, or maybe we need to explore other directions in this neighbourhood.

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# Reducing carbon emissions and water footprints through sustainable diet promotion in university and company's canteens: the SU-EATABLE Life project

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## Abstract

The EU food chain is at present highly carbon and water intensive. A significant contribution to reduce carbon emissions and water footprints can be achieved through the adoption of a more sustainable and healthier diet. However, while people are generally aware that food affects their health, the impact that food production and consumption have on the world's resources is less known. There is therefore the need to build methods and tools that raise awareness on the potential savings of resources that sustainable and healthy diets can bring, while also stimulate the population to adopt such diets. The EU-funded project SU-EATABLE LIFE aims at i) developing Guidelines that define a sustainable and healthy diet, ii) carrying out a wide range of initiatives aimed at increasing awareness and education on food-related issues by citizens/customers in universities and company's canteens in the United Kingdom and Italy and iii) implementing an easy-to-use Information Systems that enable citizens to engage on this dietary transition. The long-term objective of the project is to contribute to achieving EU targets in terms of GHG emissions reduction as well as more sustainable water use.

## 1 The global call for a shift towards sustainable diets

It is widely upheld that the planet is facing dramatic changes at unprecedented rates driven by anthropic activity [1]. Land is consumed and ecosystems altered by urbanization, agriculture, transportation, waste disposal, industrial settlements, withdrawal of primary resources and release into the environment all types of pollutants. Anthropic activities are modifying the climate [2] and impacting natural ecosystems with a drastic reduction of biodiversity [3].

The increasing level of ecosystem alteration is rising the awareness of governments and citizens. Examples are the Paris Climate Agreement, which has seen for the first time the global consensus in recognizing climate change as a real occurring environmental crisis led by human activities and has call for action by all the world states. A second example is the growing initiatives around the abatement in the use of plastic disposable items to limit the level of pollution and biodiversity loss in our oceans [4] including European Parliament's law, approved in March 2019, banning a wide-range of single-use plastic items by the year 2021. The food sector significantly contributes to the alteration of the climate and GHG emissions, and is responsible for water overuse and pollution, land use, excess release of nutrients like nitrogen and phosphorus, and biodiversity loss [1, 5]. Food production is expected to increase in the coming century driven by the increasing food demand, which will grow most steeply for meat as a consequence of the change in dietary habits [6].

Despite some of the pressure exerted by the agricultural sector is inevitable, there is a growing scientific evidence that important impact reduction targets can be achieved with key actions which include changes in dietary habits; reduction of food loss and waste; technological improvements for sustainable agricultural intensification [5, 7]. The most recent analysis of the world dietary habits has shown that, in particular in wealthy and developed countries, there is a strong unbalance in the diet composition, with high consumption of meat, dairy products, processed food high in saturated fats, salt and sugar, as well as sugar-sweetened beverages [5]. A global call for sustainable diets is hence timely and might contribute to keep most of the critical environmental targets by 2050 within the so called "planetary boundaries", i. e. "the global biophysical limits that humanity should operate within to ensure a stable and resilient Earth system" [1,5].

## 2 The SU-EATABLE LIFE project. Promoting sustainable and healthy dietary choices in canteens.

The most relevant reviews on sustainable dietary choices have shown that among the analysed environmental targets, the most significant results can be reached in terms of GHG emissions reduction [5, 7, 8]. The biggest change in diet composition would consist in a drastic reduction in animal derived proteins, in particular from ruminant animals, and a substantial increase in plant-based products, including legumes, nuts and plant-based oils as protein and fat sources [5]. The optimal composition of a sustainable and healthy plate proposed by the EAT Lancet Commission [5] would be, by volume, of approximately half a plate of vegetables and fruits, while the other remaining half, based on contribution in calories, would primarily consist of whole grains, plant protein sources, unsaturated plant oils, and modest amounts of animal sources of protein, which are optional. The same study predicted that such a shift might reduce, by the year 2050, GHG emissions from agriculture by 80%, compared to the GHG baseline emission in 2010. This might be much more effective than changes in food production practices (reduction of 10%) and halving food loss and waste (5%) [5]. A significant reduction of meat consumption might bring significant benefits also in terms of water use [9], since beef meat has a water footprint about three times higher than the respective protein input from legumes [10]. A shift to a pescatarian (or vegetarian) diet could reduce the water footprint per capita within the range 33-55% [9].

The project SU-EATABLE LIFE aims at engaging EU citizens to adopt a sustainable and healthy diet, to achieve a substantial reduction in GHG emissions and water footprints during the project timespan (2019-2021). The target is to achieve a reduction of 5300 tons of CO<sub>2</sub> equivalents and 2 million cubic meters of water. Addressing choices that people take daily can play a fundamental role in enhancing sustainability at the global level. The replication of the project has the potential to contribute to meet the EU targets of GHG reduction in accordance to the Paris Agreement and to reduce pressure on water resources by reducing the food-related water footprint of individuals.

## 3 Methodology and expected results

The SU-EATABLE project aims at carrying out a series of experiments aimed at raising awareness and knowledge of citizens on the impacts of food choices on human health and the environment and at prompting food behaviour change. The experiments will take place in a number of university and company canteens, starting from October 2019, with a duration of 5-8 months, in the United Kingdom and Italy, with a potential reach of about 56000 people.

The first phase of the SU-EATABLE project (from September 2018 to April 2019) has been devoted to three main activities:

- 1) research phase to explore the relevant academic literature on sustainable diets, as well as to collect and analyse best practice on sustainable diet promotion;
- 2) development of a database on CO<sub>2</sub> and water footprints of food items;
- 3) process of engagement of the canteens and experiment co-design process (still ongoing) with a participatory approach by means of stakeholder workshops, interviews and surveys aimed at understanding challenges and opportunities for each canteen.

From April onwards, further actions include:

- 4) Design and pre-testing of the theory and practice-based experiments
- 5) Design and pre-testing of the monitoring and evaluation plan and assessment tools

The initiatives that will be put forward regard three main areas and are expected to have the following outputs:

1) **Awareness and knowledge:** education material and other communication tools will be devised and deployed in order to increase customers' awareness and knowledge on sustainability, the impacts of food production and consumption on the environment; healthy diets; sustainable food choices etc.;

2) **Food offering:** sustainable and healthy meals and menus will be developed with the canteens so to endure a daily offer of delicious, healthy and sustainable food;

3) **Social engagement:** a digital platform will be used to enable learning about the meaning and understanding of sustainable diets and develop social- and practical skills for sustainable choices through participation in challenges and competitions. .

The target is the active involvement of at least 5000 people and to reach a consolidated change of dietary habits towards more sustainable and healthier options. Lesson learnt from experiments constitute the basis for a transferability strategy to other stakeholders, such as food retailers and municipalities, besides other canteens.

The dietary choices promoted in the canteens will be in line with the definition of a healthy diet, determined by world leading institutions and experts, among which, the World Health Organization [12], the Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases (Geneva 2002), the British Dietetic Association (BDA), the EAT-Lancet Commission on Food, Planet, Health [5]. Healthy diets are generally considered to include a diversity of nutrient-rich foods, such as vegetables, fruits, whole grains, pulses (beans, legumes, nuts and seeds), unsaturated vegetable oils, with (for non-vegetarians or non-vegans) modest amounts of meat, fish, eggs and dairy [5, 13]. Dietary choices should bring clear and recognized benefits to the environment, and in particular to GHG emission reduction and water footprint reduction. For example, reducing the weekly consumption of bovine and ovine meat and dairy products like cheese, while increasing plant-based food choices [5, 7, 9-11]. Other actions which might have a minor, although still recognized impact on the targeted environmental issues, will also be promoted. Examples include preference for fresh food, avoiding the use of bottled water and single use plastic items.

The Sustainable Restaurant Association ([www.thesra.org](http://www.thesra.org)) in UK and the Barilla Center for Food & Nutrition Foundation (BCFN) ([www.barillacfn.com](http://www.barillacfn.com)) coordinate the experiments in Italy and the UK, respectively. The greenApes benefit corporation ([www.greeapes.com](http://www.greeapes.com)) will provide a social engagement platform to engage consumers in the experiments. The platform allows to test different challenges and approach clients with a gamification approach. Wageningen University and Research and the BCFN will monitor and evaluate the experiments' outcomes in terms of behavioural, social and environmental impacts.

## Acknowledgements

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**Proposed paper**

**Title: Food, Sustainability and Digital Platforms. Understanding the role of social and technological innovations in sustainable consumption**

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**Abstract**

**1. Introduction.**

In recent years, food has become a central topic in political and public debates, with awareness of the negative social and environmental impacts of the conventional agri-food supply chain growing among citizens, who also pay more attention to the healthiness of their diets.

The way in which food is nowadays produced, distributed and consumed has significant consequences for the environment, affecting soil fertility, water and air quality, the state of the climate and the loss of biodiversity. As well as impoverishing food culture and the landscape, estimates show that contemporary global food system contributes to around 25% of global CO<sub>2</sub> emissions. Such negative externalities are strictly related to a certain mode of "western consumption", based on a resource-demanding logic of low prices, high availability of food and high waste – which characterises especially urban areas.

Food is therefore one of the key areas in which sustainable transitions are to happen. Simultaneously, the choices available to consumers are highly connected to the ways in which food is produced and circulated. At the crossroads of these challenges, we have witnessed an increase in the commitment to so-called "alternative food networks" (AFNs). Furthermore, technological advances have allowed the emergence of digital platforms dedicated to food. Both are often said to be more socially and environmentally sustainable than conventional, supermarket-led food chains.

Despite the growing range and diffusion of physical and digital food provisioning alternatives, at present very little is known about their real impact on consumption practices. This makes it difficult to understand whether they may represent new opportunities to promote sustainable diets. In this paper, we will present and discuss initial findings emerging from a study aiming to explore how socio-technical innovations in food provisioning platforms can drive/facilitate sustainable food consumption in households and the adoption of more sustainable diets.



## **2. Methods.**

Our discussion emerges from preliminary findings from the Italian part of a larger study, including five different countries: Norway, Italy, Sweden, Ireland and Germany<sup>1</sup>. The project aims to produce in-depth knowledge about the ways in which different modes of food provisioning (online/offline, alternative/traditional) interact with contemporary European sustainability initiatives to promote sustainable transitions in food consumption.

The study approaches the topic through the lenses of Social Practice theory. Focus is neither on behaviour as driven by individual choices nor on the “macro” level of institutional/technical transformations of food infrastructures. Rather, taking a “meso” level approach, we look at everyday food consumption performed in the home as enabled, structured and naturalised by socio-technical systems, cultural norms, socially preferred organisation of time and space.

In order to better understand practices in their ordinary contexts, the team has opted for in-depth, participative and multimedia interviews, including observation of those spaces and objects that, within the home, are most related to food and eating. Semi-structured interviews are prompted by photo diaries that participants are asked to provide beforehand, showing instances of different phases of food consumption: planning, provisioning, storing, cooking, eating, and disposing.

Interviewees (n. 40 in total per country) are selected among users of different types of food provisioning platforms promoting sustainable food consumption. As far as Italy is concerned, we have decided to select participants from the area of Milan, a particularly significant case within the Italian landscape. The data on which we draw come from the first in-depth interviews conducted there.

## **3. Results.**

the interview part of the project seeks to understand in what ways are sustainable food practices and sustainable diets enabled or hindered by different kinds of food provisioning platforms. Here, attention is paid especially to the material, socio-technical, organisation of shopping, eating, cooking and disposing. We also reflect upon the ways in which socio-cultural drivers to sustainability interact with other habits, temporalities, rhythms and spaces that make up everyday life.

Online platforms might seem to provide more sustainable ways of consuming food, as they supposedly simplify the buying environment, making choices more reflexive, parsimonious and less influenced by external factors such as marketing. Is this true? More centrally, platforms have the capacity to directly connect producers and consumers, hence shortening the commercial chains that are partially responsible for waste and unsustainability of contemporary food systems. To what extent is this reflected in everyday practices? And is platforms use sustainable in the long run for buyers?

## **4. Discussion and Conclusions.**

Understanding how innovative physical and digital food provisioning systems work may be of extreme importance to favour an ecological transition. Our paper critically reflects on the chances but also the challenges that different food provisioning systems embody in terms of making everyday food practices sustainable. While much work has been done in the area of critical and responsible consumption, also in relation to food, the effects of socio-technical innovations in this field have not been investigated much. The research we are carrying out seeks to fill this gap.

<sup>1</sup>HORIZON 2020 ERA-NET CO-FUND on SUSFOOD2. Name of the Project: PLATFORM: Sustainable Food Platforms: Enabling sustainable food practices through socio-technical innovation. Coordinator: Oslo and Akershus University College of Applied Sciences. Project website: <https://platforms.oslomet.no/>

We conclude with a few reflections about the scope of the study itself. Despite its many strengths (its mixed-methods approach, its innovative perspective on food, sustainability and socio-technical innovation), there are some caveats that are worth keeping in mind. Online food platforms are not transparent to the external observer; furthermore, the digital revolution – praised in the past as one of the drivers of a transition to sustainable development – is starting to show its very much *unsustainable* side-effects. As far as food platforms are concerned, there is a need to investigate the ways in which families' consumption relates to wider socio-economic and material infrastructures and their more or less sustainable trajectories of change.

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# Sustainable diets and novel food technologies

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## Abstract

To meet a sustainable food demand for the next decades boosting the production output in primary production of food materials is just one of the steps necessary (Augustin et al., 2016). Hence, it is paramount to consider some more exquisitely practical issues, among which the role of food technologies is central. For instance, optimizing food processing systems in the post-harvest end of the food production chain in accordance to energy consumption, nutritional quality, yield of final products, and application of waste of food processing in other sectors (e.g. biofuel production, textile industry, chemical industry) or in development of value-added products, can be influential in moving towards sustainable diets and consequently address issues such as energy crisis, malnutrition and waste management in post-harvest sectors (Augustin et al., 2016; Beddington, 2010; Godfray et al., 2010). In a wide way, food processing can be referred to any change made to raw food material before its consumption (Floros et al., 2010). Such changes can impose negative effects to food products by reducing the nutritional value because of the destruction of nutritional compounds. However, the benefits of food processing should not be neglected (Weaver et al., 2014). Food processing, in fact, is essential to make the food consumable, increase the shelf life, enhance the bioavailability of critical nutrients in food, and destroy the toxic ingredient of food material (Van Boekel et al., 2010). Specifically, some of the so called global ‘megatrends’ (Augustin et al., 2016, 2016; Hajkowicz, 2015), such as ‘more from less’, ‘planetary pushback’, the ‘silk highway’, ‘forever young’, ‘digital immersion’, ‘porous boundaries’ and ‘great expectations’ which address waste, energy, healthy food, environmental impact, market issues and the technical issues of production, will have a foremost impact on the design of new foods product and the technologies used to produce them. Research (Augustin et al., 2016; Pereira & Vicente, 2010; Van Boekel et al., 2010; Van der Goot et al., 2016; Weaver et al., 2014) is currently devoted to develop new techniques that enhance the food production chain by using sustainable energy while having less impact on environment and initial nutritional characteristics of raw food materials. These technologies may be used for different food processing such as pasteurization, sterilization, drying, peeling, cooking or extraction, and for a wide range of food products while production lines in different food industries have been profiting from their advantages. For instance,

various novel non-thermal food processing technologies including pulsed electric fields (PEF), supercritical CO<sub>2</sub>, high pressure processing (HPP), radiation, and ozone processing as well as novel thermal processing technologies such as microwave, ohmic heating (OH) and radio frequency (RF) heating have been regarded as alternative to conventional heat treatments in recent years. Beside production of safe food and reduction of losses in nutritional factors of the product comparing to conventional food processes, such novel technologies are empowered by green and sustainable energy (Jermann et al., 2015; Pereira & Vicente, 2010; Sims et al., 2003), and, in the case of novel thermal and non-thermal food processing technologies, can also help in saving energy and while reducing the emission of food processing (Masanet et al., 2008). In this paper, we aim at addressing some of these novel food processing technologies and assess them in the context of sustainable diets. The interdisciplinary cooperation between pre-harvest and post-harvest sides of food production systems by taking advantage of novel technologies has been introduced as an effective way to make available to the population a diet that provides them with sufficient energy and nutrition besides satisfying the environmental and ethical values (Augustin et al., 2016; Karunasagar & Karunasagar, 2016). The use of novel food technologies might improve the stability of local food production, while imposing less environmental impact and less energy consumption to extend the shelf life of locally produced food products. But of course these technologies will unlikely be evenly adopted globally (costs and specific knowledge being still an entry barrier for adoption) and might become a site of contestation as food produced using them might be perceived as non-natural or with dubious qualities.

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# CONCEPTUALISING AND IDENTIFYING SOCIAL INNOVATION IN AGRI-FOOD SYSTEMS

## Introduction

Contemporary food systems face many environmental and social challenges, such as pollution, food waste, biodiversity loss, access to healthy and sustainable food, power asymmetries, the marginalisation of farmers, etc. A transition to sustainable food systems requires initiatives aiming to transform the dominating practices. In this regard, social innovations (SI) are seen as a promising way forward. However, the concept is used in many, and occasionally disparate, ways, and social studies of food have not been immune to this.

In order to develop an academically robust account of SIs and their potential to contribute to the sustainability of food systems, this paper aims to arrive at a workable definition of SI in agri-food systems, and to identify the spectrum of SI in food provision in terms of their objectives, key agents, collaboration arrangements, as well as difficulties and obstacles encountered in their implementation.

## Methods

The study is based on a systematic review of the literature focusing on SI in relation to food provision. Specifically, we examine the use of the concept of “social innovation” in EU-funded projects and the latest academic literature on rural development, agriculture, and the food sector. After determining the salient characteristics of SI, we propose its definition in agri-food systems that is applied for the broader purposes of mapping and classifying sustainable food initiatives. The review identified four key themes to be discussed in the context of social innovations: (1) spectrum of sustainable food initiatives; (2) issues and needs; (3) agents driving SI; (4) difficulties and obstacles.

## Results

The literature presents SI in the agri-food sector mainly through a wide spectrum of sustainable food initiatives that address the problems and challenges of current agri-food systems. Based upon an examination of a range of examples of bottom-up and top-down initiatives operating at micro, meso, and macro scales, we classify the examples of SI in agri-food systems identified in the literature in the following clusters: (i) labels, trademarks, certification schemes, (ii) short food supply chains and local food systems, (iii) urban agriculture, (iv) food security, (v) reduction of food waste, (vi) awareness and education, and (vii) movements and networks.

The issues and needs addressed by SI in agri-food systems are related to several aspects of Food and Nutrition Security (FNS). These include both environmental problems (e.g. climate change and pollution) and economic and physical barriers (e.g. low-income level, long distance to distribution points) that

ultimately result in either malnutrition or food waste. The literature illustrates that technological barriers (e.g. unsuitable tools for preparing food), knowledge gaps, and the instability of food systems are also issues addressed by SI in food provision. Our research further suggests the presence of concerns related to food sovereignty, exemplified by grassroots initiatives that go against the conventional market system.

As regards the agents driving SI into the agri-food sector, our research has yielded findings regarding the role of different food system actors (e.g. producers, consumers, researchers, municipalities, civic groups, regulators) and the various collaboration models. This may include minor changes in the relationships among members of a community and extend to different groups (e.g. NGOs, media, corporations, governmental institutions) learning and working together to improve their food procurement system. The analysis of the governance of SI draws attention to the differences between sustainable food provision initiatives run and managed at different levels. These differences mainly concern the organisation of decision-making and workflow, and maintenance of local, national, and international networks.

Finally, we also consider difficulties and obstacles to SI development that prevent them from achieving their intended goals. We apply the distinction between intrinsic challenges and diffusion challenges. While the former is related to the development and initial everyday operations of SI, the latter is related to upscaling, replicating solutions in different contexts and becoming part of the mainstream. In view of the fact that SIs have pronounced social objectives and are seldom commercially motivated, their main intrinsic challenges are financial constraints and reliance on volunteer work or public support.

Based on the results of the literature review we suggest that SI in the realm of food provision should be perceived as a reconfiguration of social practices, that comes as a response to challenges of agri-food systems. The social nature of SI lies primarily in the process rather than its result. This process - the reconfiguration - seeks to enhance outcomes towards sustainability of agri-food systems and societal well-being and necessarily includes the engagement of civil society actors. However, SI can be driven by any actor (public, private, third sector). Similar to other innovations, a success related to outcomes does not define whether the initiative can be called an SI, as SI is not always a “success story”.

## **Discussion and Conclusions**

The analysis revealed that there is no shared definition of SI neither generally nor even more so with regards to its application in studying agri-food systems. It is also often the case that novel food provision initiatives described in the literature do not necessarily explicitly frame those as SIs, though they feature elements of an SI. Nevertheless, the analysis allowed to map the diversity of existing initiatives across the world (dominated by bottom-up processes) to identify the issues addressed by those along with the FNS domains dealing with availability, accessibility, utilisation, and stability of food. The analysis can

provide a basis for developing a more refined typology of SI exemplified by diverse sustainable food initiatives via looking also into the various governance arrangements, levels of formalisation, scope, target audiences, addressed elements in the food chain, and outcomes.

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## **Environmental Life Cycle Assessment of Durum Wheat Pasta and Chickpea Pasta**

### **Introduction**

The food sector faces a major challenge to deliver sustainable nutrition. Intensive agricultural practices adopted to meet growing global food demand have driven massive anthropogenic pressures on the Earth's ecosystems, notably via land occupation, fertiliser use and animal-related greenhouse gas (GHG) and ammonia emissions (Steffen et al., 2015). Synthetic Nitrogen Fertilizer (SNF) use causes high environmental and economic damage, as its production is resource-intensive, and its over-application causes N leaching and GHG emissions, degrading air, water, and soil qualities (Sutton et al., 2011), and biodiversity loss (Mozumder & Berrens, 2007). Meanwhile, billions of people are directly affected by the paradoxical coexistence of undernutrition and obesity (WHO, 2017; Zelman & Kennedy, 2005). Diet quality is worsening, through a declining consumption of healthy foods and an increasing intake of calories, refined grains, meat, added fats and sugars (Kendall, Esfahani, & Jenkins, 2010; Willett et al., 2019). Legumes provide an affordable and sustainable solution to these issues.

From an environmental perspective, legumes alleviate the damage caused by extensive use of SNF through N fixation in soils by virtue of their symbiosis with N<sub>2</sub>-fixing bacteria. Accumulation of this fixed N in plants boosts yields (Peoples et al., 2009). Furthermore, the use of legumes in agriculture increases biodiversity, and reduces weed invasion (Sturludóttir et al., 2014). The loss rate of organic carbon in soils can also be slowed, and carbon sequestration rates enhanced (Peoples et al., 2019).

This paper reports the results of a comparative LCA of chickpea and durum wheat pasta assessed over fourteen impact categories recommended by PEF Guidance (European Commission, 2018c) and a land occupation indicator. It also uses a nutritional functional unit first proposed by Van Dooren (2016), the Nutrient Density Unit (NDU). The use of the NDU in food LCAs allows the comparison of different products, and it is adequate to look at the presence of three macronutrients per kilocalories when investigating nutrient density. We hypothesise that legume pasta has a lower environmental impact than durum wheat pasta, and that these benefits are more pronounced in terms of nutrient density, and not just weight of the product.

### **Methods**

This LCA study is a comparative assessment of the overall environmental impact from cradle to fork arising from the consumption of chickpea pasta or conventional durum wheat pasta. The open source software OpenLCA 1.8.0 was used to calculate the environmental footprint of the two pasta products, using

Agrifootprint 3.0 (Blonk Consultants, 2019) and Ecoinvent 3.5 (Wernet et al., 2016) international databases. Inventory data on chickpea pasta were collected specifically for this study from CLICKS Ltd., the Bulgarian manufacturer of chickpea pasta Variva®. Data on durum wheat pasta production were adapted from Bevilacqua, Braglia, Carmignani, & Zammori (2007) and modelled as though the durum pasta was manufactured in Bulgaria to make the geographical origin of the two products identical.

## Results

| Impact category                         | Unit                   | Impact per 250g (DW) cooked pasta |               |                | Pasta NDU FU |                |
|-----------------------------------------|------------------------|-----------------------------------|---------------|----------------|--------------|----------------|
|                                         |                        | Wheat pasta                       | Chickpea _SNF | Chickpea _inoc | Wheat pasta  | Chickpea pasta |
| <b>Abiotic depletion (fossil fuels)</b> | MJ                     | 5.21                              | 5.29          | 5.08           | 6.35         | 2.2            |
| <b>Abiotic depletion</b>                | kg Sb eq               | 5.68E-07                          | 6.71E-07      | 6.71E-07       | 6.93E-07     | 2.79E-07       |
| <b>Acidification</b>                    | molc H <sup>+</sup> eq | 0.009                             | 0.003         | 0.003          | 0.011        | 0.0014         |
| <b>Freshwater eutrophication</b>        | kg P eq                | 0.0004                            | 0.0003        | 0.0003         | 0.0005       | 0.0001         |
| <b>Ionizing radiation HH</b>            | kBq U235               | 0.09                              | 0.06          | 0.06           | 0.1          | 0.0232         |
| <b>Global warming potential</b>         | kg CO <sub>2</sub> eq  | 0.48                              | 0.48          | 0.45           | 0.58         | 0.1985         |
| <b>Marine eutrophication</b>            | kg N eq                | 0.0017                            | 0.0016        | 0.0016         | 0.002098     | 0.0007         |
| <b>Ozone depletion</b>                  | kg CFC-11              | 3.60E-08                          | 3.93E-08      | 3.93E-08       | 4.39E-08     | 1.64E-08       |
| <b>Photochemical ozone formation</b>    | kg NMVO                | 0.0017                            | 0.0015        | 0.0015         | 0.002        | 0.0006         |
| <b>Terrestrial eutrophication</b>       | molc N eq              | 0.03                              | 0.01          | 0.0078         | 0.038        | 0.0038         |
| <b>Water use</b>                        | m <sup>3</sup>         | 0.44                              | 0.33          | 0.33           | 0.54         | 0.1377         |
| <b>Land use</b>                         | m <sup>2</sup>         | 0.62                              | 1.65          | 1.65           | 0.76         | 0.6875         |

Table 1 lists the derived environmental impacts for twelve impact categories. Two functional units are shown; per 250g cooked pasta and per NDU. In terms of 250g cooked pasta, chickpea pasta has the highest environmental impact for abiotic depletion (fossil fuels), abiotic depletion, ozone depletion, land use, and the three toxicity-related categories. The carbon footprints of 250g of cooked chickpea and durum wheat pastas are the same, at 0.48 kg CO<sub>2</sub> equivalents. For the same weight of pasta, chickpea pasta requires around twice the amount of arable land than durum wheat pasta, 0.62m<sup>2</sup>.yr<sup>-1</sup> versus 1.65m<sup>2</sup>.yr<sup>-1</sup> respectively. Where the FU is on a nutritional basis, per NDU, chickpea pasta scored lower than durum wheat pasta over all environmental impact categories.

## Discussion and Conclusions

An attributional LCA was performed to compare chickpea (*Cicer arietinum*) pasta versus durum wheat (*Triticum durum*) pasta from cradle to fork, using a weight-based functional unit and a nutrient-accounting

FU, the NDU. Different functional units can yield opposite results. To produce the same amount of wheat and chickpea pasta, this LCA showed that wheat pasta had a similar environmental impact than chickpea pasta, except in land use for which chickpea pasta required 2.5 times more land area. However, considering nutrition as the key function of food, comparing two types of pasta on a weight basis is highly limiting. Using the NDU as a functional unit showed that to provide the same nutrition, chickpea pasta had a minimal environmental impact when compared to durum wheat pasta.

Chickpea cultivation, transport from factory to consumer, and packaging were identified as the main environmental hotspots of the life cycle of chickpea pasta production. This study also highlighted the environmental damage associated with unnecessary use of synthetic nitrogen fertilisers for chickpea cultivation, and how farmers should inoculate their crops to obtain similar yields while having a much lower environmental impact. A change in packaging type, better cultivation practices and research into yield improvement will further decrease the environmental impact of chickpea pasta.

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**Title: The implications of the charitable food system in the quest for sustainable diets**

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In line with international trends, Ireland has witnessed a dramatic increase in charitable food provisioning in recent years. These developments have been aided by the rise of smart-app tech entrepreneurs and social enterprises creating new partnerships between corporate actors and charitable organisations (Kenny & Sage, 2019). Elsewhere, the increase in charitable food provisioning has been described as a ‘...an unfolding public health crisis’ (Garratt, 2017), signifying the corporatization of food charity (Riches, 2018) that solves neither food poverty nor food waste (Caplan, 2017). Given the increasing prominence of charitable responses, academics have called for expanding the definition of local food environment and systems to include the charitable food sector given their increasing role in determining diets for growing numbers of precariously employed low-income households (Thomson et al, 2019).

Many of today’s key challenges - climate change, noncommunicable diet related diseases and indeed food poverty - are concomitant with unsustainable food systems and contain the necessary features to be referred to as ‘wicked problems’. These characteristics include complexity, interconnectedness with other problems and difficulty in identifying effective solutions (Rittel & Webber, 1973). Rutter et al (2017) urges ‘... consideration of the ways in which processes and outcomes ...within a system drive change’. They argue that instead of questioning the success of a given intervention, such as food surplus as an answer to food poverty, the focus ought to be on whether the intervention contributes to reshaping a system ‘in favourable ways’ (Rutter et al, 2602, 2017). Thus, in the context of the Irish charitable food system, and using Cork city as a case study, the primary research question is how does charitable food redistribution contribute to reshaping the food system?

This research assumes a multi-level systems approach to explore the responses to food poverty in Ireland. This was achieved by examining the various elements and influences, such as the structure and processes within the charitable food system, the food flowing through the system, the perception and ideas shaping it, and the understanding of the problem at the level of policy makers. A multi-method data collection approach, consisting of surveys, in-depth interviews, food inventory classification, and documentary analysis is used to examine the various elements of the charitable landscape at both the national level and the local Cork city level. To

guide the analysis, elements of Mason and Lang's (2018) multi-criteria framework is used to assess the implications of using surplus.

The introduction of indirect service providers has facilitated and encouraged a rapidly evolving surplus based charitable food system in Cork and an expanding list of recipients. In the case of most charities operating within this sphere, their users are long term spanning months, years and generations in some cases. Charitable food provisioning here is neither an in the meantime response nor is it capable, at least in its current form, of challenging neoliberal politics as suggested by Cloke et al, (2018).

The results indicate high levels of food insecurity and poor health experienced by charitable food recipients. A mere 2.6% of the sample (n=76) fell within the food secure category and six in every ten participants reported one or multiple health problems with depression and anxiety being the most common. Analysis of food inventory data from one surplus redistribution hub supplying charities across Ireland, over a three-month period using a method that classifies food according to the degree of processing (NOVA), suggests that ultra-processed food formed the majority of the food flow during this period.

The cost saving ability of using surplus is a key factor in its increased use. Within some organisations surplus food has replaced supporting local businesses and this aspect of food redistribution is an area that warrants further exploration. However, many interviewees pointed to the increase in the variety of food provided, such as vegetables, that traditionally would not have formed a key element of the charitable food system and this change was attributed directly to food surplus redistribution efforts facilitated by indirect service providers. Similarly, these services have also created new charitable food flows by enabling more charities to engage in charitable food provisioning and other charities to increase their quantity and frequency of distribution. While most charities are content using surplus, issues were noted with regards to too much of certain types of food, unsuitable food, poor-quality food and pressure to accept all food donations. In some cases, this leads to surplus food being distributed regardless of the request for aid and instead of food vouchers.

Perceptions and beliefs facilitating this response include that if people are hungry enough they will eat the food supplied and that any food is better than no food. The idea that both recipients and the charities themselves should not complain, along with growing public pressure to reduce food waste is also working to keep the current system in place in the absence of any critical questioning regarding the implications of a diet based on surplus. Catering to specific requests,

health concerns, cultural requirements, or dietary needs are outside most charities' capabilities as is the provision of choice. So while all definitions of food poverty entail a reference to health/nutrition/quality/culturally appropriate food, these concerns are not evident in the current responses and arguably, never will be if the responses are based on surplus.

Government agencies have facilitated the development of food redistribution streams, and corporate actors in addition to overproduction are key to its functioning. This situation is not unique to Ireland with Riches (2018) noting the degree to which the charitable food system has become a corporate powerhouse, supported by government across Europe (Riches, 2018). This makes advocating for food waste prevention at the level of government and business a difficult if not impossible task for those relying on government and corporate funding.

The charitable food system is determining diets. This research indicates numerous implications stemming from the rise of surplus food use within the Irish charitable sector, high levels of 'severe' food insecurity and ill-health within one group of recipients, and significant amounts of ultra-processed foods flowing through the charitable food sector. Current responses risks furthering Ireland's burden of poor health and does not challenge the problems associated with the conventional food system. Moreover, the perceptions of those working within this sector act as a catalyst to maintain the status quo. Despite some noteworthy impacts concerning a wider range of food items on offer to charities, this research suggests that overall, the increasing use of surplus has significant implications for the move towards sustainable, healthy and socially just food system within Ireland.

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## The role of discourses in a transformation of social practices towards sustainability

### The case of meat eating related practices

Minna Kanerva

Social practice theories challenge individual behaviour change policies, but the way much of practice theoretical research is carried out in policy contexts does not necessarily challenge what lies at the basis of many unsustainable practices: often somewhat hidden paradigms, worldviews and values incompatible with a transformation towards sustainability. Discourses, and their boundaries, define what is deemed possible, what the range of issues and their solutions are. By exploring the connections between elements of social practices and discourses - where paradigms, worldviews and values are represented through cognitive frames – this thesis develops, firstly, a conceptual approach to help enable purposive change in unsustainable social practices. This is done in an interdisciplinary manner integrating not just social practice theory literature, but also other literatures, such as social psychology, cognitive linguistics, philosophy, critical discourse analysis and sustainability science itself. Secondly, the thesis takes meat and the current meat system as a central theme. Radical transformation in meat eating related practices is arguably necessary, as explored in the thesis in detail, yet complex psychological, ideological and power related mechanisms currently slow down and inhibit change.

Notable for the practice-discourse framework is that it allows a focus, on the one hand, on existing *strategic ignorance* of conflicting values, emotions and knowledges, and on the other hand, on the potential for *discursive consciousness* of practices, and their related (conflicting) values, emotions and knowledges. The wider, the more varied and in-depth discourses there are, the more difficult strategic ignorance is to maintain. Discursive consciousness can create *discursively open practices* which may be well established and discursively dominant in a society, but nonetheless, increasingly questioned, creating tensions and potential openings to different ways of going about the practices. Especially significant in such discursively open practices can be different and new meanings replacing, or co-occurring alongside old meanings. Discourses disseminate new meanings and potential new ways of doing things to a wider social group or society. Discursive consciousness can be seen as a key concept for purposive change. Further, it may better enable change in the context of *distributed agentive power* residing within the practice-discourse arrangement. A positive feedback loop may emerge between collective individual action creating political change, and political change changing both individual and societal values.

Taking the widened, and interdisciplinary version of a social practice theory approach to meat eating related practices, the thesis examines discourses related to the *new meatways*, firstly flexitarianism,

and secondly, eating cell-based or plant-based meats, or insects. Cognitive frames can work as a focus of practice theoretical analysis especially due to their connections to values, emotions and knowledge on the side of practices. Discourse data can be used to investigate some of the underlying issues to do with controversial practices, or practices that are established, but being questioned. Discourses can reveal much about the values, emotions, knowledge, paradigms, and worldviews linked to social practices, as well as potential coping mechanisms, such as strategic ignorance of related conflicts. The second research goal for the thesis is to answer a more specific question related to the new meatways and discourses around them potentially enabling a purposive transformation. This is done by analysing recent online discourses from the UK-based Guardian newspaper.

The analyzed data suggests that meat eating related practices can be seen as discursively open, especially due to the new meatways offering new solutions, as compared to vegetarianism and veganism. Discourses regarding cell-based or plant-based meat or insects push the boundaries of what meat is, and seeing strong flexitarianism as a realistic meatway helps imagine a solution to finding sufficient future protein for the world. Further, discourses around the new meatways can reveal somewhat hidden frames that have supported existing practices in the last decades. Two conceptual metaphors present in the data nail down well two issues regarding transforming the meat system towards radically less, or no intensive production, with the goal of radically lower negative impacts. The first metaphor, the *hungry beast*, addresses the still very present meat demand paradigm or frame in need of critical reassessment. The new meats (cell-based, plant-based meat and insects) are partially functioning in this frame with the underlining assumption that they are necessary to satisfy the starkly increasing demand for meat. The second metaphor of a *journey* illustrates how sustainable ways of eating protein, including some more conventional meat, can be realized. When framing meat eating and its transformation using this metaphor, different meatways are seen as points on a continuum, where many possible journeys along that continuum can be made. In this way even more radical changes can be facilitated. Finally, compared to the old meatways, the new meatways can better align values related to sustainability with values often being prioritized in daily food related practices, such as providing for family, convenience, tradition, freedom, politeness, and pleasure. The new meatways therefore offer a way to expand the discourse, away from the conventional animal-based meat vs. no meat dichotomy.

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## SALVÖR JÓNSDÓTTIR

### Moving towards sustainable food production - starting with agricultural land classification

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#### *Introduction*

The food system, i.e. production, processing, distribution, consumption and waste disposal, has major impact on land use. Likewise, land use decisions impact where and how the food system functions. Food system planning, entails i.a. clarifying and analyzing decisions which impact the system and connections of its components. Research in the field of food systems encompasses everything related to food production from natural conditions to waste management. This includes i.a. economics, policy making and human behavior (Ericksen, 2008; Neff & Lawrence, 2014). The food system was not noticeable in the planning field until late last century (Pothukuchi & Kaufman, 1999, 2000) but is now a recognized part of the planning both in academia and amongst practitioners. Food system planning, is a process that aims at improving the food system. It entails clarifying and analyzing the decisions that impact the system, and the connection of its individual components. In 2007 the American Planning Association adopted a policy guide on food system planning (American Planning Association, 2007) and in 2011 the Commonwealth Association of Planners released a discussion paper on food systems and sustainable farming (Caldwell, Collett, Ludlow, Sinclair, & Whitehead, 2011). Since then many municipalities and regions have moved towards the integration of land use planning and food system planning.

Agricultural (ag) production is the foundation of the food system. It is multifunctional and can both impact and be impacted by all three pillars of sustainability, economic, environmental, and social. This multifunctionality has been largely neglected by policymakers and often the farmers themselves since the main focus has been on economic efficiency, (IAASTD, 2016). Agroecology, a concept often used for sustainable ag., has been defined as, the integrative study of the entire food system comprising ecological, economic and social aspects (Francis et al., 2003). According to experts on sustainable food systems it is necessary to shift from industrial food systems to a diversified agroecological systems (IPES-Food, 2016). Iceland adopted UN's 17 SDGs in 2015, where sustainable ag. for food security is included (United Nations).

Accordingly, the Government of Iceland asserts that sustainable development (SD) must be their guiding principle. Regarding ag. the aim is set for Iceland as *"a leader in production of wholesome agricultural products... with sustainability and quality as guiding principles"* (Government of Iceland, 2017, pp. 16-17). Moreover, the Icelandic Planning Act has included SD as one of its objectives since 1997.

Ag. in Iceland has been characterized by family farming and only recently have industrial size farms and agribusiness been established. According to international studies, changes towards large scale farming, have had negative impact on rural communities (McIntyre, 2009). The fact that industrial ag. is not yet the dominant form, provides Icelanders with an opportunity to maintain the small scale of rural communities. Where large scale agro-industry has impacted rural livelihood and landscape, some communities are looking for a way to turn the tide. Smaller scale ag. may again become a viable livelihood where a new economic approach is focused on sustainable ag. and natural resource management, such as wetland restoration and reforestation (Hibbard & Lurie, 2013). Iceland may have the opportunity to move towards sustainable rural development through such approaches, but necessary groundwork for further policy decisions is important.

Food system planning is currently unexplored in Iceland, and the research thus is a pioneering work in the Icelandic context yet it will also add international literature since literature in food system planning theories is limited (Brinkley, 2013). With increased concern over ag.'s impact on the environment the concept of "sustainable food and nutrition" has evolved, a term that refers to the link between environmental sustainability and the food itself (Zurek et al., 2017). Several models are being made to assess the impact of food production on the environment, (see e.g. Gustafson et al., 2016; Lukas, Rohn, Lettenmeier, Liedtke, & Wiesen, 2016; Zurek et al., 2017), that may help make informed decision for ag. land use.

Sustainable food system planning may also be suffering from a disjoint approach, where planning for farmland may not have connections to planning for food consumption. Linking those two may be necessary to improve the sustainability of the current food system (Ajates Gonzalez, 2017). The objective of this study is to look at if and how land use planning can be applied to support sustainable agricultural food production.

#### *Methods.*

This study is a qualitative case study where Icelandic agricultural land use planning and policy are analyzed. An international literature and document review on food system planning and agricultural land use planning was conducted to establish the background for the Icelandic case. The land use and ag. polices are studies using the lens of food system planning. In the research both direct and indirect political forces on ag. are analyzed; direct political influences impact farming through regulations and policies, whereas indirect political influences exert their effect through the market, which is in turn impacted by subsidies among other things (Archer, Dawson, Kreuter, Hendrickson, & Halloran, 2008). Planning is an applied field concerned with both making and applying policies that involve spaces and places. Theories in planning are concerned with either existing practices or its transformation, and must thus be both explanatory and normative (Fainstein & DeFilippis, 2016; Friedmann, 2011; Parker & Doak, 2012). The policy analysis was conducted on Icelandic legislation, regulations, policies and programs with regard to:

- 1) Rural development and land use (local plans);
- 2) Agricultural policy/legislation (provisions and incentives);
- 3) Agricultural subsidy contracts (provisions and incentives);
- 4) Rural and agricultural land use policies (national policies); and
- 5) Agricultural food production policy (provisions, incentives, guidelines).

All topics were reviewed and evaluated with regards to SD's three pillars, environmental, economic and social, and the food system's main components.

#### *Results*

The findings suggest land use planning methods can be applied to move agricultural food production towards sustainability. Moreover, planning for healthy food production should start with agricultural land classification that reflects the goals for sustainable land use and sustainable food production.

#### *Discussion and Conclusions*

Sustainable food production is one of current times biggest challenges. Every step and loop in the food system must be planned and executed according to the leading goal of sustainable development if achievements are to be expected. Agricultural land is a limited resource and must be carefully planned for according to space and place based scientific knowledge as well as desired outcome for its product. It must therefore be evaluated and classified not only for highest potential yield but for sustainability and resilience. This case study adds to the toolbox of environmental management and planning for sustainable food production.

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## Natural Resource Management in Hawaii

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**Title:** Natural Resource Management and the Future of Food Sovereignty in Hawaii following the End of the Islands' Sugar Industry

**Key Words:** Food Sovereignty, Natural Resource Management, Hawaii, Sugarcane, Biodiversity, Agroecology

### Abstract:

Hawaii's 180-year-old sugar industry ended with the closing of Maui's Pu'unēnē Mill in December 2016, leaving 35,000 acres of Maui's Central Valley in a state of unknown transition. This research explores the history of Hawaii's sugar industry and its impact on the islands' ecology, food sovereignty, politics, demographics, and economy to better understand the future of Maui's Central Valley. Using data gathering from interviews with Maui farmers, this research describes the current proposals for the 35,000 acres of former cane land—highlighting the proposal that has gained the greatest community support, the *Mālama 'Āina Report* (Luyendyk and Pell, 2016), which recommends a regenerative agriculture plan for the remediation of the land and the rebuilding of a diversified independent Hawaiian food system. This paper examines the benefits of the formation of a Central Maui Food Hub and its implications for Maui's cultivation of community, cultural preservation, food security and sovereignty, and the island's next generation of farmers.

Before sugarcane transformed the global economy, it was first domesticated in New Guinea between 8000-6000 B.C.E. Sugarcane, or *kō* in Hawaiian, was initially brought to Hawaii between 400-500 C.E. with the Polynesian seafarers who first settled on the islands (Chang, 1970). *Kō* was one of 35 “canoe plants” carried by Polynesian travelers to help establish reliable plant sources for food, ritual, materials, and medicine on newly settled lands (Chang, 1970). Canoe plants included *awapuhi* wild ginger, hibiscus, sweet potato, turmeric, banana, *ulu* breadfruit, the *kukui* candlenut tree, kava, and coconut palm (Luyendyk and Pell, 2016:34). The earliest *kānaka maoli*, Hawaiians, “grew nearly 40 varieties of *kō*,” to eat and to use as medicine (Chang, 1970). *Kō* was integrated into the Hawaiian *ahupua'a* land division system that utilized terraced gardens to grow food, connecting production along mountain streams to the islands' valleys and the coast in a regenerative cycle. As Pell and Luyendyk (2016:10) describe, the sophisticated *ahupua'a* system encompasses “complete watersheds from mountain peak, *mauka*, to reef, *makai*, with several distinct sub-systems for food production, aquaculture, and communal land use.” Due to its high need for water, *kō* was planted along the terraced “embankments of the *lo'i*, taro ponds,” which helped prevent soil erosion (Chang, 1970). Prior to western contact, Hawaii's abundant *ahupua'a*-based agricultural system was able to feed one million people (2016: 10).

Hawaii's location near the Tropic of Cancer made it an ideal setting for the commercial cultivation of sugarcane (Chang, 1970:39). The first successful sugarcane plantation in Hawaii was established in Kauai in 1835 (A&B Sugar Museum, 2018). When slavery was abolished in the Caribbean in 1838, wealthy U.S. investors focused on Hawaii's potential to produce sugar commercially to capitalize on the disturbed market (Franklin and Lyons, 2004:62). With increased investment and mechanization, the sugar industry boomed in Hawaii, increasing production from "10,000 tons in 1870 to half a million tons in 1910" (Mollett 1962:383), dramatically changing patterns of land ownership on the islands. By 1970, the Hawaiian sugar industry occupied "two-thirds of the cultivated land" in Hawaii (Walvin, 2017:39). The sugar industry directly impacted "the economic and political stability of Hawaii," eventually leading to the overthrow of the sovereign nation and its annexation to the United States (Walvin, 2017:171).

Prior to Western contact, the Hawaiian Islands produced enough food to feed one million people; today, Hawaii imports 90 percent of its food (Luyendyk and Pell, 2016). Despite Maui's fertile growing conditions and diverse microclimates capable of producing a wide range of crops including coconuts, bread fruits, bananas, leafy greens, potatoes, peaches, apples, cacao, and coffee—the island has only a ten-day supply of food at any time (Mollett 1962). Through the clearing of old growth forests and lands, the diverting of streams, and the polluting of watersheds, the sugar industry devastated Hawaii's resilient and abundant ahupua'a food production system, creating the fragile, insecure food system still in place on the islands. The fate of Maui's Central Valley has the potential to shift Hawaii's food system away from export-driven production towards a regenerative network that reinvigorates Hawaiian traditions and rebuilds food sovereignty.

This research discusses the effectiveness of various soil remediation techniques, arguing that Maui's Central Valley has the potential to become an international model of how to transition polluted industrial agricultural lands into productive, diversified farms—offering a social model for how to reappropriate colonized lands. Hawaii's food sovereignty is essential to the kānaka maoli's growing fight for Hawaiian political sovereignty and independence (Baker, 1997:641). The regenerative farming plan for Maui's Central Valley has the potential to fulfill the current need on the island for more kānaka maoli-led educational programming, giving Native Hawaiians power to determine how their culture is represented and shared (Baker, 1997:651).

Hawaii is known as "the endangered species capital of the world" (Luyendyk and Pell, 2016). Local farmers are hopeful that the transition of Alexander and Baldwin's Central Maui lands will allow for the planting of diverse crops to help rebuild the island's fragile ecosystems, biodiversity, ecological resilience, and food security (Tanji, 2018). As the leading proposed regenerative farming plan, the *Mālama 'Āina Report* suggests retrofitting the old sugarcane fields to build an agroecological farming system—through the use of integrated pest management, cover cropping, swell design, diversified planting of annual and perennial crops, sustainable livestock management, aquaculture and aquaponics, composting and waste recycling, and reforestation—to allow for holistic management and diverse scales of agriculture that form a "whole farming economy that is just and environmentally sound" (Luyendyk and Pell, 2016:35). The primary focus of



regenerative farmers looking at the future of Maui's Central Valley is to "find crops that could be grown profitably on Maui while minimizing the need for toxic chemical inputs," using canoe crops and other locally-adapted varieties to build a vibrant local food economy (Luyendyk and Pell, 2016:4).

Currently, sugarcane monocultures cover 64 million acres of the earth<sup>5</sup>, the majority of which are farmed using conventional extensive methods. The knowledge gained through transitioning a site like Maui's 35,000 acre sugar plantation could form that basis of an international "regenerative agriculture education industry" to aid in the restoration of polluted lands (Luyendyk and Pell, 2016:4); as one farmer on Maui explained, the transition will have "an impact far beyond our shores" (Luyendyk and Pell, 2016:4).

With the regenerative transition of Maui's former plantation lands as an example, the next generations of Hawaiian farmers will have the opportunity to grow food sovereignty, farming systems, and communities shaped by Hawaiian knowledge and *mālama ka 'āina*, care and respect for the earth.

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## **Extended abstract – Conference “Sustainable diets < > sustainable food systems”**

Submitted by Paola Termine, American University of Rome.

### **Sustainability of agro-food systems and rural migration. A conceptual framework to analyze the “missing link” between agricultural development and the migration decision.**

#### **Introduction**

In the process of structural transformation, the role of agriculture and food systems<sup>1</sup> is changing, with unclear impact on the provision of rural livelihoods and the decision to migrate. The link between migration and agricultural transformation has been at the basis of the seminal theories on growth and structural change, focusing on the movement of surplus labour from traditional agriculture to modern industrial sectors in response to productivity and wage differentials (Lewis, 1954; Harris and Todaro, 1970). These models, however, mainly focused on rural-urban and permanent migration, and considered agriculture dominated by low-productivity and traditional operations, failing to explain the different composition in terms of individual characteristics, and patterns of migration (permanent, temporary, seasonal, circular) (Lucas, 2007). The link between migration and agri-food systems has not been systematically studied, especially for what concern intra-rural movements and non-permanent migration.

Agri-food systems are increasingly important in terms of their contributions to GDP, employment, and exports, and witness a process of integration in regional and global supply chains (Reardon 2015). The middle segments of the value chains (including processing and wholesale) are transforming quickly and becoming important contributors to the economy, especially in developing and middle-income economies. In fact, rapidly transforming agri-food systems that respond to consumers’ demand in urban areas, have the potential to enhance value addition and employment in their more modern stages of the chain, such as processing (Reardon et al., 2015; Kwame-Yeboah and Jayne, 2017).

However, a trend common to many countries is that rural youth, and especially skilled youth, are increasingly leaving the agriculture sector. Agriculture and other rural enterprises are not part of youth’s aspirations. This is not surprising as the majority of agricultural employment is precarious and seasonal; contracts are informal, therefore with no access to social security; working conditions are hazardous; and, more importantly, agricultural work is characterized by low productivity, low pay, and ultimately by low social status. “Modern” food systems coexist with traditional and mixed food systems, and are often closely interlinked (Gómez and Ricketts, 2013). While unsustainable agro-food systems, which rely on underpayment and underemployment of the workforce and provide marginal revenues to producers, act as push factors for rural outmigration, development of agro-processing in mixed and modern food systems can create rural

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<sup>1</sup> In this paper, the FAO definition of food systems is utilized: “Food systems (FS) encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded” (FAO, 2018b).

employment in areas of origin, or attract labor migrants in areas experiencing agricultural transformation. Food systems and the stage of development of agriculture and rural economy have a strong impact on job opportunities and on the perspectives offered by farm and non-farm activities, both in areas of origin and destination, therefore playing an important role among the structural, macro-level, migration drivers.

The relationship between food systems and migration is more complex. For example, there is evidence of a positive correlation between migration and agriculture value added per worker. Countries that are completing their agricultural transformation witness slowing-down of rural-urban migration, while countries at an early stage of rural transformation can expect internal rural-urban migration to spike up (Arslan, Egger and Winters (2018, IFAD)).

### **Food systems and migration: determinants, impact and transmission mechanisms**

Rural outmigration can ease population pressures on scarce resources - especially when agriculture suffers the impact of climate change - enhance educational opportunities and skills development for youth, allow households to diversify their income sources through remittances and facilitate access to goods and services or invest in income-generating activities. However, outmigration also poses challenges to rural development and transformation, since it drains the most productive and dynamic labor force from the local economy and implies social costs for families and communities left behind, who are often unable to productively invest remittances.

Based on the definition of sustainable food systems / value chains, it is important to retain the key elements that exemplify the linkage between food systems and migration: the ability of the food system to generate employment and livelihoods opportunities; and the “feedback loop” from migration into investing remittances and direct investments in the food system. In terms of the participation of each household, whether households engaged in agriculture are integrated in food value chains, either horizontally (e.g. through farmers’ associations and cooperatives) or vertically (e.g. through contract farming, or other supplier contracts with agri-food businesses) can have an impact on migration decisions and outcomes.

The analysis of the linkage between food systems and migration can be declined according to the following:

1. Engagements of individual and households in specific food systems / value chains, including in what capacity they are engaged, at what node/activity of the value chain and with what degree of specialisation and skills; and how this engagement has changed as a result of migration, both at the level of the individual migrant and of the household;
2. The characteristics of the food systems and the nature of their operations, for example whether they produce mainly for export markets or for local markets; whether the main produce is food or cash crop (making reference to secondary data)
3. Some indicators of the “performance” of these systems, such as the degree of diversification within the food system and the chain; the value addition at different stages in the chain, the integration with other activities, labour intensity; small-scale or intensive agriculture.

## Methods

This conceptual framework has been developed in the context of a study undertaken by FAO, the Ministry of agriculture of Egypt, and Cairo University. The study, which includes a combination of qualitative and quantitative tools, will collect primary data through a survey (November 2019) covering 300 households, selected through a stratified random sample. The purpose of the survey is to gather data to better understand rural migration trends, drivers and impacts, disaggregated by age and sex. The survey will examine socio-economic characteristics, incidence of migration (in its different forms), with respect to the prevailing food systems in the target areas.

## Discussion and Conclusions

The link between rural in- and out-migration and agro-food systems has started to be discussed in recent years, however with a paucity of data and evidence on how the performance and sustainability of food systems impact the creation of employment, and therefore influence migrations' decisions. In the context of the North Africa and Middle East Region, where agro-industrial transformation is occurring unevenly and where agro-climatic conditions in many countries are worsening, the issue of how agro-food systems can mitigate migration has important social, economic and political implications.

The development of economically competitive, environmentally sustainable and inclusive agri-food systems can enhance rural livelihoods and provide alternatives to migration, as well as counteract some of migration's negative impacts on rural areas. In this context therefore, providing incentives for private and public investments in selected agro-food value chains as a way to provide alternatives to migration, together with the engagement of diaspora and the reintegration of returnees, for instance by supporting their productive investment in agricultural and rural activities, represent policy and intervention areas still largely untapped. A better understanding of the complexity of rural migration drivers and trends and their connection to the performance of agro-food systems can sustain more coherent and complementary policies on rural and urban development, employment and migration, to respond to concerns of rural development, youth unemployment and over-urbanization.

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Conference: 'Sustainable Food Systems < > Sustainable Diets'

Extended Abstract

**Re-peasantization strategies: Potential catalysts for dietary sustainability?**

## Introduction

In light of the global challenges faced by a rapidly growing, urbanizing population (Food and Agricultural Organization of the United Nations [FAO], 2017), how to eat sustainably continues to hold a central place in governance rhetoric and policy debates. Adding complexity to the matter are the now well-acknowledged socioeconomic, nutritional and environmental flaws of the industrial agro-food system (FAO, 2017; Hinrichs, 2012; Sage, 2012).

Since the peak of agricultural modernization in the 1950s, structural changes in farming have reconfigured mechanisms of food supply and demand. Farmer autonomy has been compromised, as farmers have been “squeezed” amid vertical value chains (Marsden, 2003; Ploeg, 2018). Meanwhile, global dietary patterns have altered, comprising a growing share of cheap, meat-heavy, calorie-dense, processed and convenience-based foods (Hawkes, Harris, & Gillespie, S., 2017), with direct implications on the prevalence of diet-related disease (WHO, 2017). Characterized by *distanciation* (Buttel, 2005; Sage, 2012) and opacity (Nicolosi, 2006), the industrial food system promotes a consumer society detached from primary production (Goody, 1982) and encourages a “placeless foodscape”—commodity-like food removed from its socio-spatial context (Morgan, Marsden & Murdoch, 2006). Yet, micro-initiatives have emerged in different contexts, demonstrating resistance to conventional production practices and developing socially innovative models that invite a different consumer choice.

In Europe, the 1990s was marked by a notable wave of re-peasantization—a conceptual framework introduced by rural sociologist Jan Douwe van der Ploeg to mark the emergence of a mode of agriculture that emphasizes farmers’ agency and sustainability (Ploeg, 2008). At the time, the countryside was undergoing notable changes—a new rural development paradigm was instilled, encouraging farmers and policy-makers to re-imagine rural space beyond agricultural productivity. Also, changing consumer habits generated the “quality turn”—an intensified demand for environmentally-conscious, traceable and healthy food (Goodman, 2004).

Using a qualitative, field-based two-case design, this study explores the manifestation of the re-peasantization phenomenon in two small farms in southern Italy. Each farm’s operational logic, including its practices, strategies and pursued objectives, as well as its social networks were analyzed. The purpose was to evaluate the extent to which these practices reflect the proposed framework, and discuss their potential to cultivate more sustainable forms of consumption. Both farms selected for study are characterized by diverse agricultural and non-

agricultural practice (e.g.: tourism, territorial valorization, education). The first, NOTEdi, is a farm and agricultural enterprise located in Giarratana, a village in Sicily's southeastern Ragusa province, that produces and sells saffron and other wild aromatic and officinal plants. Metafarm, the second case, is a cultural association and “social food lab” located in the village of Montepertuso in Campania's Amalfi Coast, that offers a culinary-rural experience called “gastronomic trekking” (GT), where visitors are invited to forage, cook and eat wild foods.

## **Methods**

The researcher spent just under one month in each farm collecting data in-situ. Using a semi-structured, open-ended interview guide, a total of 26 face-to-face interviews took place including 6 group interviews and 20 one-to-one interviews. Key informants provided most of the insight into the farms' respective function and structural organization, though the data was not limited to their perspectives. People involved in the farms' social networks were also interviewed. Data collection combined four methods: descriptive field observations, face-to-face interviews (in one-to-one and group formats), documentary information and audio-visual documentation. All interviews were transcribed by the researcher. Data for each case study was examined and analyzed separately.

## **Results**

Findings from the two case studies have pointed to a clear operational logic guiding each farm's motives, strategies and social relations. By grounding their activity in internal human resources and natural resources, reliance on external inputs and expertise is minimal, and by consequence, environmental and economic costs are limited. The interviews underlined the importance of place ecology, namely soil fertility and climate, as favorable to the activities' success. While central to the production practice, territory (the rural space and the people tied to it) is also essential for consumption purposes. What fundamentally distinguishes one case study from the other is that Metafarm is consistently in direct contact with the consumer of their “product”—place-based storytelling, foraging and eating are equally relevant to the GT experience. NOTEdi, on the other hand, is not always present to tell their story to consumers—rather, product packaging, labelling and direct contact with shop vendors all contribute to indirect value communication. Nonetheless, they both seek to promote alternative, non-industrialized types of consumption.



For Metafarm, the tourism-dense setting of the Amalfi Coast contextualizes GT as an activity that defies the classic tourism formula typically favoring a transient form of consumerism. By using a combination of storytelling, foraged and locally sourced ingredients, walking, and cooking vegetarian dishes, Metafarm proposes a more sustainable form of tourism and consumption that values the place's rural traditions. Interviews with visitor-consumers revealed a heightened awareness about foraging as a low-resource activity that can be practiced in their own context. Group discussions also fostered reflections about what it means to “eat local” in a context of mass-tourism, and about food quality and dietary habits in their own countries. In NOTEdi's case, interviews with shop vendors and observations with consumers underlined a purchase interest not merely motivated by the product's high quality, but also by a desire to support an independent youth initiative that values the territory, a sense of community, and sustainable cultivation practices. Consumers are also encouraged to plant saffron bulbs in their own gardens and are taught about the culinary and dietary benefits of the dried herbs.

### **Discussion and Conclusions**

This study contributes to the documentation of contemporary rural realities in Italy, while highlighting the potential repercussions that re-peasantization strategies may have on consumer dietary practices. Recalling that sustainability is a contested and socio-spatially determined term (Ankeny, 2012; Buttel, 2005; Hinrichs, 2012), contextual specificity plays a crucial role in shaping farmer motivations and strategies, and a desire to promote sustainable consumption.

Both cases demonstrated a strong degree of resource mobilization (both immaterial and material) and diversification, strategies that often fosters greater autonomy and self-organization (Marsden et al., 1993; Ploeg, 2008). Taking on pluriactive roles, Metafarm and NOTEdi can be discussed as socially innovative cases that seek a contextually divergent way of practicing and communicating food and agriculture-based activity, one that typically deviates from social norms and works independently from state-led bodies (Bock, 2016). The types of consumer markets sought by both cases can be described by the notion of shared value—the role that markets can have in addressing a societal problem (Porter & Kramer, 2011). In this way, a product (whether a food-based experience or a food product), embeds a web of social relations, of territory and place history, as well as cultivation methods, that can generate greater awareness about and promote practices reflective of sustainable diets.

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Extended abstract

*Exploring the feasibility for transitions towards a sustainable food system in the Argentinean foodscape*

Clara Craviotti

### **Introduction**

During the last decades, the Southern Cone of the Americas has witnessed the expansion of flex crops devoted to food and biofuel production that are the basis of accumulation processes on a global scale. On the other hand, alternative agricultures based on small-scale producers combined with agroecology or organic production have acquired new momentum thanks to the emergence of segments of consumers, both in the international and the domestic market, which demand food products with different qualities. Their development can be considered as “seeds of change” towards a more sustainable food system.

In this context, one of the issues analyzed by this paper is the challenges that an alternative system of food production poses for Latin American countries, particularly Argentina: a medium-developed country with systematic accumulation crises. Another issue is to discuss the key social groups for making changes in the current food system. The Argentina’s case is of extreme relevance given that the country is seen as one of the early strongholds of neoliberal globalization of food and agriculture, and because of the importance of certain crops in the country’s economy (Gurcan, 2018)

### **Methods**

This study is based on the combination of quantitative and qualitative research techniques, mainly the analysis of available quantitative data and documents. In the first case, statistics of harvested areas of main crops, agri-food trade, local consumption of food items, commercial balances of agricultural products, generation of foreign currency incomes, and contribution of different types of family farmers to food production in Latin America are considered. On the other hand, several documents that analyze initiatives and policies towards a change in the Argentinean food production system are considered.

### **Results**

The study shows the structural and conjunctural vulnerabilities of Latin American countries that narrow the possibilities for adopting policies towards a more sustainable food system. Among them, it highlights that the need to reach a balance in the Argentina’s fiscal account places severe restrictions on the implementation of this kind of policies. On the other hand, an internally differentiated family farming sector raises another set of problems when thinking about possible changes in the food system. Considering its numerical weight, family farming is the most important category among agricultural producers; however, there are huge differences regarding the size of family farmers’ units, their contribution to employment and production. In the case of Argentina, the more capitalized family farmers account for half of the sector’s production, and a good deal of it goes to the global market. Only in field vegetables, which are mainly sold in the domestic market, less capitalized farms produce almost 44% of the total.

## Discussion and conclusions

The role of part of the family farming sector in sustaining export production strengthens the argument suggested by Murphy and Burnett (2014) that these producers do not necessarily want to change their form of production, and the need to consider the effects of agrarian class differentiation on the alliances towards a change in the food system (Gurcan, 2018). However, it also highlights that capitalized family farmers tied to the expansion of industrial agriculture experience contradictory outcomes.

Considering these insights, the paper sustains the need of exerting an influence on these farmers who are prone to adopting technologies that increase yields (Craviotti, 2002) but have not been sensitized on alternative ways of food production. The challenge is to avoid an excessive decline in their returns and productivity due to the reduction or abandonment of synthetic inputs through a transition period and more participatory research on the subject (Peano and Sottile, 2017). The paper also highlights issues that hinder a change in the macro level (and usually neglected by agrarian studies), particularly the type of insertion in the international division of labor of developing and medium-developed countries and their reliance on the incomes generated by export to obtain foreign currency and finance their state spending.

Food movements can play an important role in searching strategies that bridge the interests of different rural and urban groups towards a more sustainable food system. Up to present, there have been a small number of public policies towards food sovereignty in Argentina and they involve tensions with the simultaneous promotion of activities considered as the central axes of development (Arzeno et al., 2015). Although elements of resistance to the hegemonic production model and discourses promoting alternative ways of production and consumption have emerged (Carballo, 2017) more evidence is needed on their capacity to affect national policies.

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# DEURBANIZATION AS POSSIBILITY FOR SUSTAINABLE FOOD SYSTEMS

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## Introduction

The overexpansion of the cities during the last two centuries, caused by rapid urbanization and industrialization, led to unprecedented increase in the economical and social development.

The Human Race went through a phase of abrupt transformation of the natural resources into human wealth, which turned into affluence for the general population (or at least for large part of it).

The intensive extraction and usage of fossil fuels and their derivatives as chemicals into the food production led to abundance and price drop, which on their turn allowed the possibility to sustain large population. Then the consumption turned from covering basic needs to chasing wishes.

Now that we are facing the truth behind the rapid social transformation, we can see the actual price we paid for it: depleted natural resources, water scarcity, erosion of arable land, shrinking flora and fauna over the land and in the seas, overburdened cities and declined urban areas, etc.

In the 21<sup>st</sup> Century, The Human Race entered the Resource Scarcity Era, which means that the “Affluent Society” is something we cannot sustain further, as the current levels of consumerism and overcrowded cities could not be supported without continuous flow of resources.

But there is a solution.

The declined rural spaces are now far more attractive for those urban dwellers, who decide to split apart with the overconsumption (best described as a “rat race”), noise, traffic and other urban problems and began to reconsider the urban way of life in a search for a more balanced one, closer to the long forgotten rhythm of the Nature.

In the process of searching for a more balanced way of life, such urban dwellers decide to leave the urban space and to migrate to the rural areas.

Such process, known as Deurbanization, was witnessed throughout the history, but the contemporary version reveals new, specific aspects.

Those new rural dwellers are searching for “space”, “freedom”, to live closer to the nature, to spend more time with the family or friends, etc.

The new rural dwellers also change their understanding of the food and the diet (in some cases even one of the main reasons to migrate), as they are look for healthier food and lifestyle, which the supermarkets and the food chains in the urban spaces have difficulties to meet, as usually they are offering mostly industrial food.

The production of biologically produced food is far more labour intensive, with more care, without usage of chemicals, as during the times of the Traditional Societies, which in turn lowers the profits.



This is in total contradiction with the philosophy of the industrial agriculture, which cannot afford to change their entire production process in order to be able to biologically produce food, which is a very costly move, with the perspective of lower profits. This is why usually the easy way is just to “polish green”.

But the resource scarcity and the shift in the consumers demand are putting enormous pressure on that.

In their search for more balanced lifestyle, naturally, the new rural dwellers put great importance to the proximity to the earth and to what it gives us. Disappointed by the supply of the food industry and industrial agriculture offer to the market, the new rural dwellers are taking a step forward, although to some it may seem like a backward one, and decide to grow food to meet their needs. In some cases the food they produce exceeds their own needs and is offered for exchange or sometimes even for sale.

The process reveals how sustainable food chains could be build, as the process of Deurbanization offers interesting alternative, where consumers could establish direct connections with [a local] bio food producers or even to produce the food by themselves.

## **Methodology**

The methodology used is on desk research and in-depth interviews, carried out in Bulgaria. The questionnaire with more than 100 questions was designed to cover several aspects. More than 30 respondents took part.

## **Results**

All respondents in the In-Depth Interview cultivate plants, vegetables, trees, vines and some of them also grow animals (mostly small mammals or hens). Some even breed horses that are used for riding or as part of a business (riding schools, rural tourism, etc.). There are also cases of bee-keeping for the production of honey and the cultivation of various types of flowers and herbs.

Other interesting to mention thing is that the new rural dwellers are looking to preserve or revive traditional agricultural practices.

Readapting to the new environment, the understandings of this ex-urban dwellers expand in many ways is an attempt to merge with the local rural community, their understanding and traditions, but at the same time also adding new energy and ideas. Part of this process is also the search to reestablish old farming traditions and practices, combined with a new understanding in the food production, like the Permaculture. The outcome is a small scale production of food with a very high quality, enough to cover a household needs and also often a revival of traditional varieties, improved by new understanding in the food production, which is more biologically and nature-friendly oriented.

## **Conclusion**

We can assume that one of the important aspects of Deurbanization is precisely related to the change in Food Systems, as the new rural dwellers are changing drastically their patterns of food consumption and as a result they not only switch their diet to more biological foods, but also they tend to produce locally food for their own consumption or even to exchange or sell.

The impact of this change in patterns is difficult to be predicted, as further research is needed, but it seems that the process of Deurbanization offers the possibility to build up sustainable food chains.

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### KITCHEN THINK-OVER:

Towards an Architecture & Urban Design for Sustainable Diets

‘Sustainable diets’<sup>1</sup> in practice would inevitably imply our cities to work in ways quite different from how we know them to function today. That is – spatial and urban layouts – actively facilitating the desirable shifts in our urban populations’ food practices. But what exactly would those implications be, in future housing developments, or for architecture and urban design in general? In these fields - directly concerned with accommodating our rapidly urbanising world - the question of how any of the necessary shifts in urban food practices could be physically accommodated, is rarely discussed beyond the theme of ‘urban farming’. The spatial implications of sustainable urban food logistics, storage, retail, food preparation, disposal and waste management do not feature in the dialogue in any significant way, and are even less frequently considered in mainstream urban development projects. I argue, this would be all the more urgent, given how significantly spatial logics - on all scales from the layout of one’s kitchen up to larger urban configurations - dictate people’s behaviours and implicitly define what is convenient to do, on a societal level. Studying the issue in the context of affluent Western cities, my research aims to demonstrate how their spatial development and potential new models of affordable housing could facilitate the necessary changes in urban food practices; what the design implications would be - the design traditions/conventions we should abandon, and where we would need to invent new solutions, so that our future food spaces could simultaneously respond to demographic changes, technological developments and environmental concerns.

My working paper addresses this question from two directions:

First, from the point of view of demographic change, analysing the everyday food practices of a diverse sample of urban dwellers, who all live in different forms of non-familial households. Based on a series of semi-structured interviews and mapping exercises conducted with them, my work highlights the multiple ways in which they are challenged to cook/eat healthy home-cooked meals, or to consider the broader environmental aspects of their actual food practices. My findings are partially aligned with recent work by social scientists, Bowen et al.<sup>2</sup>, who draw attention to the significance of people’s (lack of) resources in determining their food practices. However, my design perspective and agenda lead me to rather different conclusions: Beyond **money, time and**

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<sup>1</sup> as understood by Mason & Lang in Sustainable Diets, 2017

<sup>2</sup> Pressure Cooker: Why Home Cooking Won’t Solve Our Problems and What We Can Do About It, by Sarah Bowen, Joslyn Brenton, Sinikka Elliott; Oxford University Press, 2019

**infrastructural-access**, I suggest to also consider two additional factors, namely **'know-how'** and **'company'**. Furthermore, in my view, the more important question that follows from there, is how the city itself (through architecture and urban design) might become able to provide access to these factors, and facilitate ways in which their burden can be better distributed in post-familial societies. This leads me to my second angle for approaching the initial question: from the point of view of spatial and technological opportunities. Here, I focus on the phenomenon of **'the hybridisation of food spaces'** - a concept I coined to describe the current tendencies of urban food spaces diversifying their functional programmes physically, as well as merging their operations with virtual platforms. This part of my work is primarily based on spatial observations and the architectural analysis of a series of case study 'sites' from major European cities. Examples of this include the up-market supermarket with cafes, salad bars and cookery schools suddenly appearing between the isles; home-based technologies which increasingly lure customers to shop for their groceries online or have restaurant meals delivered; 'food waste cafes' connecting the issues of food waste with deprivation and social isolation. Or the homes of the eco-conscious, with re-emerging practices of home-growing and home-composting. Each of these are independent developments - many quite controversial -, some driven by economic pressures and new technologies, while others by concerns for the environment or vulnerable social groups. Yet, each of these developments implies spatially merging - or blurring the lines - between previously separate food operations and assumed domains. Therefore, collectively they can be understood as a new process of 'hybridisation' in urban food spaces. My aim is to first describe and analyse this phenomenon, understanding the forces giving rise to these developments, as well as mapping their further implications. And ultimately, to uncover the design potential that this phenomenon may hold - if consciously steered in a strategic way to shorten our urban food supply chains, to cut out waste, and democratise access to sustainable diets.

Friday, 11 October 2019

## **Identifying drivers of Vienna's Urban Food System: towards a sustainable diet**

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### **Introduction**

Continuous growing of urban population brings changes on the socio-economic environment, including food, as urban food markets consume up to 70% of the food supply. Scholars show increasing interest in cities and their dynamics in food security. Cities are becoming strategic places for developing more sustainable food systems. Literature on food systems reveals multiple perspectives and frameworks. Those capturing all relevant characteristics of food systems consider food systems as complex human-nature systems, i.e. social-ecological systems (SES). But we identified the need for further systematization of current food system models following the SES approach. Revised models should bring explicit attention to food system dynamics and provide structure to guide sustainability pursuits [1-3]. Thus, we propose a framework which builds on Ericksen's [4] food system model, coupled with Checkland and Scholes' [5] theory of "hierarchical organized wholes" and Ostrom's [6] framework for analyzing SES.

For this study, we have chosen the city of Vienna as a case study to analyze an urban food system. Vienna's Urban Food System (VUFS) is framed considering the proposed framework and a sustainable diet as principal guiding purpose of the food system. There is increasing interest into regional food, organic food and a diet with less meat. Literature indicates that this orientation would have several positive consequences for regional economy, the environment and human health. However, how to make a change towards such a food system is less discussed. Hence drivers have been identified that would contribute to such a transformation.

### **Methodology**

To understand drivers of VUFS a profound knowledge of how VUFS is organized is necessary. We propose a model that includes four main sub-systems of VUFS: Resource; Information; Consumers; and Governance. These sub-systems and their interactions are also influenced by their inputs and outputs. The purpose of the system is to contribute to food security, environmental security and social welfare. Finally, VUFS is embedded in local, regional as well as global scales.

The characteristics of each sub-system of VUFS, their interactions and drivers have been identified and analyzed using the following methods: (i) two focus groups (n=5; 7) with key actors and Vienna's Food Policy Council; (ii) 32 Semi-structure interviews with key actors (n=38); (iii) one participatory workshop (n=39) with representatives from different institutions of VUFS; and (iv) one online survey (n=23) with interview partners and other suggested key actors.

Interview partners were selected via snowball and purposive sampling. All qualitative data (i, ii and iii) was analyzed using inductive and deductive coding. Raw data from the online survey was converted into a 4-Quadrant Matrix Chart, i.e. impact matrix for drivers' direct and mutual impacts. Drivers in the system can act as active (impact on other drivers), passive (impact from other drivers).

## Results

Although some interviewees do not perceive VUFS as a system, interviewees identified different sub-systems presented in the framework and the relations among them. The embeddedness of VUFS in global and especially European scales is perceived as critical to understand VUFS. Some main characteristics of VUFS seem to be: the high number of urban producers and share of organic agriculture; the role of the city government in public procurement; the variety of alternative initiatives; the diversity of consumers; and the migration of producers and processors from the city to the rural area. Interviewees mentioned different drivers that seem to influence VUFS, that were then clustered in 15 main drivers.

According to the impact matrix analysis, the drivers found to play the most active role in VUFS are 'Dependency on national and European legal frameworks', 'Dependency on international trade' and 'Food purchase and consumption practices'. Some of these drivers are external drivers that are perceived as difficult to influence or change from a local perspective. Thus, a second rating was done in a participatory workshop. These results show that the most important drivers perceived to have a high influence on VUFS for achieving a more sustainable diet are: (a) *Urbanites' food purchase and consumption practices*; (b) *Information for and education of consumers about food*; and (c) *Urban and Hinterland production*.

## Discussion and conclusion

Consumer preferences drive the demand for food and are developed in response to the food market. Consumption patterns seem to be in continuous development, although they are often slow in change. In support of our identified levels to influence consumers' practices, Johnston, *et al.* [7] found that people's diet can be influenced with campaigns involving public education, advertising targeted programs and the provision of better labeling. Consumers seem to be unaware of the origin of their food, making it easier for food systems to remain unsustainable. And even if consumers might be aware of the environmental impact of their consumption habits, they may still not be ready to sacrifice personal benefits in order to contribute to environmental sustainability. Further research on Viennese consumers' barriers to a sustainable diet is needed.

Urban as well as hinterland agriculture seem to be relevant components of VUFS in order to increase regional food production and have the potential to increase regional products. Furthermore, the benefits of linking urban and rural areas include local economic development, public health and ecosystem protection. The increasing interest on urban agriculture is a common trend found in Europe, but it still needs support from the local governments by incorporating urban agriculture into long-term city planning and include different actors of the system. Local governments are increasingly developing their own local solutions for urban food systems. One important tool from city governments are public procurement institutions. Many cities, including Vienna, have started to reform their public procurement services by introducing organic or regional products or by starting cooking from scratch again [8]. These measures should be further developed in VUFS in order to support a sustainable diet.

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# THE AMERICAN UNIVERSITY OF ROME GRADUATE SCHOOL

Conference

Sustainable Food Systems <> Sustainable Diets  
Rome, Friday, 11 October 2019

## **Title proposal**

A Food Policy for Rome: the path for the transition towards a sustainable Roman food system

## **Introduction**

The research describes the path that a group of researchers, practitioners, experts and associations are carrying on in order to stimulate the debate on the need to provide for an urban food policy for the metropolis of Rome. Rome is the European city with the largest amount of agricultural areas within the urban area, yet they are scarcely integrated and highly fragmented, economically, socially and spatially. At the same time, the city is facing several challenges typical of western metropolis, directly or indirectly connected to food: waste management, “westernization” of diets with evident consequences in terms of obesity and malnutrition, growing poverty and lack of access to resources, abandonment of agricultural lands, disconnection of urban-rural linkages, and many other. Moreover, Rome has signed the Milan Urban Food Policy Pact, nevertheless the city never committed in developing a food strategy. The growing debate about the importance of systemic approach to improve the sustainability of food systems, has stimulated some actors coming from universities and activism movements to gather a group of stakeholders in order to start talking and discussing about the need of a Food Policy for Rome. The objectives are threefold: to point out to the administration that Roman agro-food system has enormous potentialities and some threats that should be taken into account by policy-makers in order to face several challenges that the city is facing nowadays; to stimulate community participation to food system debate, improving the awareness about the potential impact of a food policy and increasing the social capital among the actors of the food system; to provide for and suggest some instruments and tools in order to implement a systemic food strategy for the city of Rome.

## **Methods**

The research has been conducted through a mix of different methodologies: a questionnaire delivered to some key actors of the food system of Rome; the direct experience of the authors, being them among the first promoters of the bottom-up initiative; the theoretical framework, which is the base for the initiative, derives from the scientific literature exploring topics of food systems sustainability, urban-rural linkages, urban food policies. Furthermore, this work represents the result of a long-term research activity that prof. Marino and his staff have been performed in the last years on the agricultural landscape of Rome (Cavallo, Tufano, Marino, 2012; Cavallo, Di Donato, Marino, 2015), its food system (Marino, Cavallo, 2014) and foodscape (Cavallo, Guadagno, Marino, 2014).



## Results

As already mentioned, this work intends to show the steps that a group of stakeholders have been carrying on in order to formulate a proposal for a Food Policy for Rome. Nevertheless, it worth specifying that the process is still going on and the final outcomes are still uncertain, depending on an endorsement or a direct involvement by the city administration.

The first section of the work (the interviews to some key actors) has been the basis on which the proposal for the Food Policy has been built. The priorities of the interviewees focus mainly on three objectives of the Food Policy: the creation of an active economic model around the agri-food chain, which guarantees an adequate income for all the players in the system (91.9%), the promotion of the specificities of the territory and the constitution of short supply chain forms and production diversification (88.7%). An element shared by the various interviewees is the development of a broad and adequate food policy/governance for the metropolitan city of Rome, at the level of those developed by other European capitals. It could establish a systemic and shared local food planning process, with objectives of social and ecological regeneration. Moreover, it should start with an inclusive and truly participatory Food Council, which also sees the presence of alternative food networks and is supported by adequate funding. This space for debate can provide institutions with indications and tools to encourage the reconversion of existing agri-food structures and the expansion of local, ecological, small-scale and solidarity food networks, but also school canteens and all collective catering. Finally, a Food Policy should be based on the importance of education and sharing, spreading information on healthy and sustainable food in a free and disinterested way.

The first result of this participative bottom-up approach is a shared document that shows why Rome would need a Food Policy, starting from the analysis of the food system and arriving to formulate a list of ten proposals. The participative process has continued through the involvement of other institutional partners and experts interested in the path, and through the implementation of working groups dedicated to the pillars that have been deemed to be extremely relevant for Rome: Access to resources (land, seeds, etc.); School catering and Green Public Procurement; Agriculture and labor rights; Food distribution and consumption; Solidarity economy, food rescue, food poverty.

## Discussion and Conclusions

Many Italian cities have begun to develop urban food policies. Some of them started working in this direction before the Expo and the launch of the MUFPP, while other cities were inspired by the Expo and its legacy (e.g. Milan and Turin). The number of Italian cities signing up to the MUFPP is growing and 25 of the 193 signatory cities are now Italian. Beyond these 25 signatories, many other Italian cities are substantially engaged in this process but are not currently connected to each other through a network, although many of them belong to different international networks, including Healthy Cities or the Eurocities networks, which have specialized groups focused on this issue. In this context, Rome, among the signatories of the MUFPP, has not yet started a process to implement a food strategy, even though the analysis and the evidences emerged from the participative consultation with stakeholders have shown the potentialities for the city and the importance to give a priority to re-think the food system and address it towards sustainability and resilience. This multi-actor urban governance coalition is seeking to enroll pre-existing fragmented initiatives by scaling up food-related activities and advocacy to address broader policy concerns. The city, in other words, can become a strategic transition node that can exploit the policy vacuum created by the absence of comprehensive, coherent and integrated national and supra-national food policies to develop more sustainable food systems. Systemic perspective unveils emerging patterns, relationships and phenomena that would not be visible under a

siloed approach (Sonnino et al., 2019). Thinking of food systemically entails two main things: first, a consideration for the global environmental and socio-economic dynamics that affect (and are affected by) all activities involved with the production and consumption of food; second, and partly related to this, a focus on the relations and connections (or lack of) between all actors involved with those activities at different stages of the food system (not just production and consumption but also processing, packaging, retailing, distribution, transportation, storage and waste management).

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# SUSTAINABLE FOOD PRODUCTION AND CONSUMPTION IN A RESTRICTED AREA WITHIN MAJELLA NATIONAL PARK

## 1. Introduction.

Food availability, access and utilization, as well as the roles of different stakeholders involved, including the consumer, contribute in the dynamics of food system changes in relation societal, environmental or distributional goals. Focusing on nutritional outcomes for different consumers by age, gender and wealth with different dietary preferences, on multiple delivery pathways of food including home production, open markets purchase, supply by retail and supermarkets, on out of home consumption from restaurants and food services and to evaluate the effects on dietary intake and possible impacts on nutritional imbalances (Ruben R et al 2019) could explained the linkage between food system dynamics and human nutrition. According to FAO (2012), *sustainable diets* definition recognizes the interdependencies between food production and consumption, nutrients needs and dietary guidelines in addition to the links between human wellbeing and ecosystem change. Reynolds et al. (2014) reviewed that several studies, but not all, achieved environmental benefits by reducing consumption of animal-based foods and increased consumption of fruit and vegetables, probably due to the similar levels of environmental impacts in reducing land, water, and resources. Otherwise, Vieux et al. (2012) found that when meat were isocalorically replaced by plant-based products there was a null effect, or even increased environmental impact because of the amount of vegetable substitutes to replace animal proteins and calories. As suggested by Lairon (2010), an ecological healthy diet should be included *more nutrient-dense and plant food-based, with plenty of fruit, vegetables, nuts, whole grains and some fish*. Virtually, this agree with a dietary pattern not far from Italian Mediterranean eating habits that respects both the environmental impact and the significant social and economic role in the development of rural areas and in the context of biodiversity conservation. Many rural areas of Italian agricultural system are strongly characterized by local small production grown with techniques based on the historical and cultural tradition of that specific territory and occurring only in that place (Azzini et al., 2012). The aim of the present study is to examine the sustainability of Mediterranean Diet on a sample population living in a restricted area within Majella National Park.

## 2. Methods

By cross-referencing territorial statistical data and socio-economic characteristics of areas proposed by National Strategy Plan for Rural Development (PSN) (Art.11, EU Reg.1698/2005) a restricted area within Majella National Park has been selected. The study has been carried out in five municipalities (Montenerodomo, Pizzoferrato, Gamberale, Lama dei Peligni e Pennapiedimonte) located at province of Chieti in the Abruzzo region. The socio-economic analysis has been organized in two lines of activity. The first regarding a document analysis aimed to understand the importance of local products in the diet of subjects living in the analysed areas, traditionally very linked to agriculture and to local

productions, reconstructing the production system, verifying the dynamics of conservation/abandonment of consumption in favour of other products. The second was carried out by two surveys aimed at defining the relationships existing between the production sector and local trade and the composition of consumer demand. A nutritional survey evaluated diet and lifestyle in a population group living in the five municipalities selected for the socio-economic survey (198 volunteers, 61 males and 137 females, aged 18-86 years). Data were collected by questionnaires to gather information on the health status, lifestyle and physical activity, food consumption and eating habits. Adherence to the Mediterranean food pattern was evaluated by a semi-quantitative food frequency, using the Mediterranean Dietary Serving Score (MDSS). The Mediterranean Dietary Serving Score (MDSS) is based on the latest update of the Mediterranean Diet Pyramid (Monteagudo et al., 2015). A higher or lower contribution to the recommendations is assigned a score of 0 with a total score ranging from 0 to 24. Statistical analyses has been performed with StatSoft® STATISTICA 8 for Windows (StatSoft, Italia Srl).

### **3. Results**

Socio-economic assessment within selected municipalities highlighted two clearly distinct areas. A first one, including Montenerodomo, Pizzoferrato and Gamberale, with higher presence of agricultural activities, there is a supply farming system that replaces the retail businesses, giving an important contribution to fresh products distribution (meat, eggs, cured meats, vegetables). In the second area, including Lama dei Peligni and Pennapiedimonte, the link with the agricultural activities has progressively lost over time and globalized production is more present as well as greater similarity in food demand and eating habits like “urban” municipalities. In the first area has been observed that 98.4% of volunteers consume local products with a 64,9% and 50,9% of consumers’ preferences, respectively for authenticity and organoleptic characteristics for local food products from their perceived quality; in the second area, 84.6% of volunteers choose eating local food, with the 61,5%, 41,5% of preferences for local food authenticity and organoleptic characteristics respectively. The nutritional assessment highlighted a mean diet quality by MDSS out of a total of 24 points of  $15,1\pm 3,5$  for Montenerodomo, Pizzoferrato and Gamberale area significantly higher ( $P<0.001$ ) than Lama dei Peligni and Pennapiedimonte one, where the adherence to the Mediterranean food pattern was a mean MDSS of  $12,1\pm 3,9$ .

### **4. Discussions and Conclusions**

The main goal of this study has been to harmonize the different methodological frameworks proposed for assessing the influence of the dynamics of local trade and consumption on the maintenance of agro-food production systems, on the agricultural biodiversity and on the Mediterranean eating habits of a population living in specific rural territory, the Majella National Park. This multidisciplinary approach allow to define an area with a reasonable maintenance of local agricultural biodiversity as well as the agricultural techniques and production practices. Our data underlined the close relation between local productive sector,

lifestyle and food consumption of local communities, markets and local supply chains. From the perspective of consumption behaviour analysis eating local is mainly determined by the knowledge of local products that ensures the purchase of an authentic product, with better organoleptic properties. a. Furthermore our finding underlined the role of local foods in improving diet quality and their direct relation to Mediterranean dietary pattern. As suggested by EAT-Lancet Commission (Willet et al, 2019) *achieving healthy diets from sustainable food systems for everyone will require substantial shifts towards healthy dietary patterns, large reductions in food losses and waste, and major improvements in food production practices*. Our research seems to support this statement

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### **"We are the food Talibans". Building sustainable food systems in the Italian Western Alps**

The Italian Western Alps have historically been characterized by very peculiar food systems. Influenced by their geographical verticality and by their hinge position, their dwellers have practiced a long lasting "culture of interaction" (Salsa 2009). The Maritime Alps, in particular, have been the crossroad of goods and people, marking the toponymy of the passes. The salt route and the anchovies routes, through which sea-origin valuables were introduced into the Padan valley, are an example of this history of movement. It is also the ecology of the alpine space which heavily influenced this in-motion food system, since the altitude determines the species growth: organized into production belts, inhabitants of the highlands would exchange food altitude products with middle and lower dwellers, triggering an interdependence system. Rye, barley, potatoes and dairy products from high altitudes would be exchanged for wood, chestnuts and corn from lower belts, and with wheat and fruits from lowlands, guaranteeing not only the survival of the population but a varied diet, nutritionally sustainable.

The XX century heavy depopulation of these vertical food systems, led by an inurbation and industrialization drive, has condemned the mountain to a peripheral role, downplaying its centrality in the urban-rural production and consumption system. Indeed, what and whom was left from such population hemorrhage became a symbol of underdevelopment and backwardness, condemned to isolation.

However, this demographic trend has been reversed in the past years (ISTAT 2001-2011), thanks to a new flow of inhabitants, formerly known as amenity migrants (Moss 1996): migrants by choice, by force and by necessity (Membretti, Kofler & Viazzo 2018) these new dwellers are re-inhabiting the highlands through new foodways, shaping a new social environment.

In particular, the migrants by choice, namely young urban dwellers with high social, cultural and economic capital, are playing a crucial role in practicing sustainability, by opening agri-tourisms, organic small scale farms and livestock and niche cultivars. "We are the Talibans of food" effectively stated an interlocutor, on the one side self-acknowledging his strictness in conceiving and practicing agriculture and feeding his clients, but also proving a missionary zeal in spreading the new eco-ethics of sustainability. Embracing very contemporary driven production choices, such as herding goats rather than cows because "Italians are getting more and more lactose-intolerant", most of these new dwellers are practicing new strategies of interaction with the ecology and the social environment. While migrants by choice have the means to start up activities, migrants by force and by necessity (asylum seekers hosted in structures waiting for their visa permits and foreign residents who moved to the highlands in search for a cheaper cost of living) are playing a crucial role in allowing the feasibility of the mentioned projects: they are indeed the labor force.

Thanks to this trend inversion, the mountains are slowly reappearing on the press with titles such as "migranti. Accoglienza diffusa: nelle aree alpine funziona meglio che in città" (lit. "Migrants: spread reception: in the alpine setting it works better than in the cities"); "una migrante Etiope fa rivivere le montagne Italiane grazie alle capre" (lit. "An ethiopic migrant gives the mountains a brand new life thanks to goats"); "i migranti salvano le nostre montagne" (lit. "Migrants save our mountains"). Proving a reversibility of the food systems and of the development paradigms which have characterized the food production/distribution/consumption choices of the XX century, many of these the new mountain dwellers' projects prove that new social, environmental and food production sustainability strategies are possible. And they are made possible not only by the presence of the outsiders but also, and above all, by the acknowledgment of an interdependence: between human collectivities, between the human collectivities

and the non human ones (Latour 2006), between highlands and lowlands and between rural and urban centers.

The ontological turn characterizing of the anthropocene has indeed re-directed the attention to nature as a collectivity to which human beings belong as one species among many others: mushrooms (Tsing 2017), animals (Viveiros de Castro 2017), plants (Mancuso 2018). Although the relationship between what in the West is considered nature and what is considered culture might be reversed as compared to other areas of the planet, the interdependence between these collectivities is indisputable, and the most fragile ecological areas, such as highlands and lowlands, prove to be privileged observatories.

The here proposed presentation aims at addressing the virtuous sustainable practices put in place in the Maritime Alps. By analyzing diachronically the alpine foodscape and the interconnections between the ecology and the social organization of the communities, the paper will shed light on the multiple nature of food sustainability: environmental, ecological, social, nutritional.

Drawing from ethnographic data recently collected, the critical aspects of a highland development and wellbeing will be tackled, and examples of virtuous projects will be provided in order to give some examples of efforts to implement food production and consumption practices in sustainable directions. Final remarks will address broader theoretical questions: is sustainability universally definable? Given the multiple nature of sustainability (social-ecological-nutritional-environmental) will we have to reframe it into sustainabilities? Is a sustainable diet a direct outcome of a sustainable production?

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## PhD Project: Culinary Spaces in Northern Sweden and its implications for regional sustainable development

### **Introduction**

Food and gastronomy has been identified as a tool for creating new futures in rural areas all over the Western world, by contributing to economic, social and environmental sustainability and at the same time increasing the attractiveness and competitiveness of places (Rinaldi, 2017). In its resolution from 2016, the United Nations General Assembly underlines the importance of food and gastronomy in sustainable development, proclaiming that the world needs to attend to the importance of sustainable gastronomy in achieving the Sustainable Development Goals. A word of mouth is that no course is better than its' crude material; thus, restaurants with high ambitions are dependent on delivery from food suppliers who can deliver products with high quality in a sufficient quantity for the given business. As noted in the Eat Lancet report (Willet et al, 2019), *"culinary experiences of different regions provide many opportunities to learn new ways of preparing diets that are healthy and enjoyable"*. Willet et al (2019) underlines the importance of taste and cultural acceptance and the role that chefs have in the dietary shift. Chefs with high competence in gastronomy have an important part to play in the transition to sustainable diets; they have the skills to make healthy, sustainable diets the attractive and tasty alternative; transforming a simple carrot and its peel into delicious gourmet foods. We suggest chefs and restaurants can function as ambassadors for new, sustainable, tasty diets and inspire innovative ways to prepare key ingredients such as beans and lentils, vegetables, or even in the near future, make insects into fine dining. This is one of many reasons to why it is relevant to study food production in relation to gastronomy.

Surrounding the chefs and fine dining restaurants, naturally there need to be a network of food suppliers. Previous research has indicated that in locations with higher number of small-scale food producers, there is a significantly higher number of gourmet restaurants (Johansson & Pettersson 2014). Experiencing local gastronomy may create a demand from consumers that allows food producers to expand sales of their products also to other customers than partner gourmet restaurant.

Little research has looked into the reasons to why chefs use local foods, and in what way this is done. Among those who did, Inwood et al (2016) had similar research questions to ours, looking into the demographic characteristics of restaurants and chefs using local foods in Ohio, the chefs' role as opinion leader, their engagement in food networks and the structural conditions for food supply, as well as motivations in early adopters utilizing local foods. They found a surprising absence of ideological rhetoric, and a pragmatic view regarding use of synthetic inputs in the food. Price was not of concern to the chefs but can be of importance to customer adopters. Moreover, they emphasize the potential of chefs as opinion leaders with the potential to influence both customers at the restaurant as well as farmers, and highlight the value of digging further into the motivations and assumptions chefs have regarding use of local food. They conclude that taste is a highly valued quality in



local foods, while production standards were of less importance to the chefs who had mixed attitudes towards this. Chefs also had a strong deference and trust in local farmers.

From this USA-based research, this PhD-project moves on to dig deeper into the “why” and the “how” of using local foods, place and terroir in restaurants; this time in a Swedish context, and in an era where sustainability is the word on every one’s mouth. Data collection for the qualitative part will begin autumn 2019. The aim of the project is to understand the implications of fine dining restaurants for regional development, sustainable food production and gain knowledge of restaurant’s roles in the establishment of linkages between rural food producers and consumers. In this project, we will present a new concept, *Culinary spaces*, to elicit a relational network surrounding a mutual interest in food and gastronomy. The concept involves three types of actors: 1) the *gourmet restaurant* where guest may experience the regional gastronomy and products) the *regional producers* who supply the restaurant with their products, and 3) the *guest* at the restaurant who may come from near or far, with the sole purpose of experiencing fine dining, or as a tourist in the region with a need to eat; leaving with a meal experience in their backpack. Our project will focus on the relationship and perspectives of the restaurateur and the producers.

Our projects strive to answer questions regarding how fine dining restaurants in the northern part of Sweden is linked to food producers: What are the motives behind the frequent use of regional produce in fine dining restaurants -is it the sensory quality of the product, or other values such as storytelling or production standards? How is the place with its traditions, resources and characteristics (simply put, its *terroir*) used in the restaurant concept? What are the obstacles that hinder the use of regional produce, and in the case where these relationships are successful, what is the recipe for success?

These questions will guide a qualitative inquiry with chefs and restaurateurs in a sample of restaurants in the northern part of Sweden. The project will also explore how the restaurants’ suppliers assess these relations. What do these relations mean for their possibility to thrive in rural areas of Sweden? How does it affect the producer’s possibility to reach wider markets?

## **Methods**

The project was commenced by pursuing the question regarding the spatial diffusion of fine dining restaurants in Sweden with a Geographic information system analysis, using neighborhood statistics and restaurants listed in the Swedish restaurant guidebook White guide (see [whiteguide.com](http://whiteguide.com)). This procedure allows us to assess characteristics of locations who have survived over time, and those that are discontinued. Preliminary results show that fine dining restaurants are increasingly establishing in rural areas of Sweden.

In the next step, unstructured interviews and observations will be used to explore how chefs and restaurateurs’ use local products, and how their restaurant concept relates to the places’ characteristics and resources. We will then use a method called “fridge stories” (see Joosse 2014) to examine the networks and relationships between the restaurant and local/regional food producers from the restaurant’s perspective. In this method the informant is asked to guide the researcher through the restaurants’ food storages. The food products will be used as a dialogical tool to stimulate conversation about, and map the

origin, of the food. Lastly, the perspective will shift from the restaurant to the producers' perspective. A sample of the restaurants' suppliers will be interviewed with semi-structured interviews followed by observations at their locations.

### **Expected contributions**

The study is expected to contribute to a deeper understanding of the how and why fine dining restaurants use local/regional foods and how terroir is used in restaurant concepts. Furthermore, the project will highlight relational networks between restaurants, food producers and consumers, and the reasons and obstacles for using local/regional products. We hope the project will provide the restaurant industry as well as food producers with information that can inspire and help them in developing their business linkages, as well as inform policy makers about the prerequisites for food entrepreneurs in rural areas.

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## Neglect me not: plants of the past are foods for the future

### Introduction

As we grapple with the global challenges of poor diets (under-nutrition, over-nutrition, and micronutrient deficiencies) and their relationship to ecologically destructive agricultural practices (Willet et al. 2019), awareness is simultaneously growing regarding the widespread loss of biodiversity and its ramifications for nutrition and food security (IPBES 2019). Research has shown that agrobiodiversity can play an important role in battling diet-related illnesses and malnutrition (Nugent 2011; Remans and Smukler 2013; Allen et al. 2014; Powell et al. 2015, Bioversity 2017). Unfortunately much of this biodiversity is currently neglected and underutilized, despite its traditional place in local diets and ecosystem functioning (Padulosi et al. 2013; Meldrum et al. 2018). In addition to local efforts—especially by indigenous and family farmers, to conserve and sustainably manage wild and cultivated biodiverse species, much of their survival depends on wider incorporation of these resources into sustainable cultivation and consumption practices.

To successfully promote neglected and underutilized species, we need better knowledge of their nutritional properties, and must develop policy support for their marketing and commercialization. Ultimately, raising awareness of their untapped potential for sustainable food and nutrition security can contribute to further achievements of many Sustainable Development Goals (Fanzo 2019) and Aichi Biodiversity Targets of the Convention on Biological Diversity (Hunter et al. 2019).

Focusing on the cross-cutting link of diets with human and planetary health, the *Biodiversity for Food and Nutrition Project* (BFN) project started in 2012\* to explore neglected and underutilized species in Brazil, Kenya, Sri Lanka and Turkey. The project aimed to develop an adaptable approach to prioritization, research, and promotion of biodiversity for food security and nutrition policies and practices.

### Methods

The BFN approach was implemented in four target countries - Brazil, Kenya, Sri Lanka and Turkey - each characterized by high biodiversity, unique traditional use of native species, yet high malnutrition status. The partner-led, multi-sectoral, interdisciplinary approach followed three overarching linked actions:

1. Providing evidence: compiling local knowledge on food species, prioritizing those with high nutrition and economic potential, conducting food composition analysis, and sharing knowledge with national partners from the agriculture, environment, health, education, social development, and market sectors.
2. Influencing policy and markets: advocating for the inclusion of indigenous species in policies, strategies and action plans, creating new policies to incentivize food biodiversity, and identifying markets including public food procurement and school feeding.
3. Raising awareness: sharing information through cultural and gastronomic events, educational initiatives, training workshops, and outreach activities across the supply-demand spectrum.

For example, evidence was shared on the supply side with BFN Kenya’s localized approach in Busia County, which connected a community-based farmer support group with schools, policymakers, and farmers to encourage local production and create an enabling policy/market environment for underutilized crops. Meanwhile, on the demand side, evidence generated by the project was communicated to consumers in order to influence dietary habits and appreciation of food culture. BFN Brazil partnered with political institutions, universities, indigenous communities and celebrity chefs to further incorporate native crops into policies, national food-based dietary guidelines, markets, school curricula, gardens and meals.

## Results

Altogether BFN has documented the food composition data on over 190 prioritized species, with country-level achievements including:

BFN Brazil’s work led to a “Socio-biodiversity” policy ordinance listing 101 regional species as nutritious foods eligible for procurement programs. Because this list serves as a guide for implementing the Food Acquisition Program, National School Feeding Program, and the Minimum Price Guarantee Policy of Biodiversity Products, this greatly expands institutional capacity for local produce, and ensures fair prices and markets for family farmers (UNSCN 2017a).

BFN Kenya is helping conserve and promote nutrient-rich African leafy greens by linking farmers to local schools for their provision in school meals (UNSCN 2017b). Busia County has developed a Biodiversity Conservation Policy – the first of its kind across Kenya's 47 counties – that recognizes the importance of traditional foods for nutrition and food security.

In Sri Lanka, under the brand name “Hela bojun - True Sri Lankan taste”, 17 market outlets for the sale of traditional foods are empowering rural women to earn a living while sourcing local foods.

In Turkey, the annual Alaçatı Herb Festival attracts thousands of visitors to celebrate wild edible plants through seminars on nutrition and diets, exhibitions, nature walks, selling of local products, activities for children, cooking workshops, contests, and visits to the Wild Edible Plants Collection Garden. Turkish students have also been introduced to wild edibles within a “green” vocational training program.

Each country has produced a Policy Brief with key messages and actions to better mainstream biodiversity for improved nutrition, with entry points including Dietary Guidelines, National Biodiversity Strategy and Action Plans.

Global outputs include [www.b4fn.org](http://www.b4fn.org), a repository of open-access information including nutrition information on over 190 species and varieties, recipes, and articles. The project has produced a free E-Learning course with case studies, entry points, and barriers for mainstreaming biodiversity.

## Conclusion

The BFN Project has developed a methodology focused on evidence, policy and awareness, however, the examples from different countries demonstrate that context determines the most effective approach to mainstreaming agrobiodiversity for nutrition. In particular, the success of activities depends on partnerships that build off pre-existing demands and opportunities. Operating in four significantly

different countries has shown to be a strength, with the exchange of lessons learned across countries forming a critical component of the project.

As the first phase of BFN concludes (2012-18), the project is sharing methods and results, for example, with its inclusion in the FAO's State of the World Report on Biodiversity for Food and Agriculture, presented at the 17<sup>th</sup> session of the Commission on Genetic Resources for Food and Agriculture (February 2019), as well as anticipating how to adapt to further regions in the future. With support from the Australian Centre for International Agricultural Research, BFN is initiating rigorous testing of the direct procurement model in additional schools and countries where it is possible to build off pre-established regional partnerships. This will be key in establishing a strong quantitative evidence basis demonstrating the feasibility of up-scaling the growth, sale, and consumption of underutilized species. Additional evidence can also support further policy successes and contribute to increased awareness and capacity for nutritious, culturally-relevant biodiversity.

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**Title:** Agrobiodiversity in rural Bulgaria – plant genetic resources and biocultural transformations

**Introduction.** As a result of the restitution in the 1990s the Bulgarian state-owned large-size farming enterprises were fragmented and land was distributed among thousands of small owners many of which were not prepared to start agricultural business and preferred to sell their land. Consequently, the Bulgarian agricultural sector today consists of few mainly grain-producing private holdings and numerous mainly small, extensive, semi-subsistent fruit and vegetable farms. Thus, during the last 30 years, depopulation in Bulgarian rural areas have accelerated and led to a decline and deterioration of (traditional) agricultural livelihoods and to a disruption of local food production on a national scale. Private farmers cannot effectively sustain local plant genetic resources that, in the past, contributed to the economic sustainability and positive image of rural areas. We have explored and documented the current state of local plant genetic diversity and how it is preserved in Bulgarian rural gardens and have approached possible opportunities and obstacles of small-scale farmers and food producers whose production and sustainable farming practices depend on these gardens in times of global climatic and socio-cultural transformations.

**Methods.** Interdisciplinary ethnobotanical and ethnographical field work was carried out in villages and small urban settlements situated in four provinces in South and North-West Bulgaria. We focused on mountainous and semi-mountainous regions where agriculture was an additional source of income and traditional extensive agricultural practices were still maintained. Semi-structured interviews were performed in 32 settlements together with surveys of the plant composition of home gardens and available historical/archive resources.

**Results.** The current study provides evidence that cultivation of specific local crops and landraces together with the related traditional and modern knowledge are still maintained by interested individuals mostly for home consumption. Many of these landraces were already neglected crops during the Communist period but have found their rather cultural than economic place in the rural home gardens or small agricultural plots near urban areas. In remote areas people tend to rely more on home-selected and home-grown garden produce. Home gardens provide fresh seasonal food (thus diversifying summer and autumn vegetarian options) and raws for home-made preserves, many of which are a part of family traditions. Amateur plant conservation and maintenance of favored landraces are still practiced in all studied regions. Senior citizens are frequently trusted as keepers of old or rare plant genetic resources. Folk and professional selection of old Bulgarian varieties are described as “better than those from the market”, charged with nostalgia and even turned into memorabilia and/or connection with close and distant interrelations. On the other hand the innate interest of our respondents to new and exotic crops has resulted in the import and exchange of various species, often regardless of their hardiness or invasive potential. Changes in climatic, biological, economic and socio-political circumstances are recurring themes in the interviews, showing complex fluctuations that shape present personal agro/horticultural choices.

Although local crops and landraces in Bulgarian home gardens are mainly a food resource, their cultural value should also be considered as a part of their complex valorization. Gardens in rural Bulgaria are reservoirs for neglected field crops (i.e. grass-pea, cowpea and black eyed pea) and also for old Bulgarian varieties and landraces that have originated locally but have never reached industrial scale of cultivation. Very few of these land races are currently produced for the market and/or included in other business model. In their quest for identity local communities often select these “iconic” crops to be celebrated at modern fests where the perception about them is reshaped and their value is reconsidered. Such fests promote these crops (i.e. Smilyan beans, Kurtovo Konare vegetable landraces, etc.) and support local business related to them. These fests also contribute for the popularity of the landraces and their distribution to other regions. The positive response to local biocultural heritage stimulates the local communities to further investigate their genetic resources and consequently consider their preservation.

**Discussion and Conclusions** Local plant genetic resources sustain local food traditions, food sovereignty, and production of quality food all around the world. However, the unsustainable shift to subsidizing big farms (often monocultures based on imported seeds) in the last 15 years has pushed local varieties and landraces in the backyards compromising the once recognizable image of Bulgarian agricultural produce and food sovereignty in one of the EU Member states. Moreover the growing discontent of imported plant food stimulates the demand for quality produce with local origin and reliable quality both in rural and urban areas. Many of the studied home gardens provide (seasonal) food

sustenance in rural areas, especially for communities with low-income and/or in regions with underdeveloped social infrastructure. Home-grown garden produce, especially from local varieties, is regarded not only as food but also as a source of self-pride - the well-kept garden contributes to the positive image of a capable owner. Preservation of local crops resistant to drought, knowledge on collection of hunger foods from the wild and general willingness to participate in nature protection are positive prerequisites for community strategies for adaptation to climate change. They can be also the fundament of urgently needed grassroots educational/awareness activities, especially among young people and agriculture and food processing entrepreneurs. We have assumed that home gardens in rural Bulgaria partially compensate the major gap in locally produced food, especially unprocessed and artisanal products, on the Bulgarian market. We claim that the potential of food-related local businesses involving sustainable (re)innovative products and practices based on preserved local bio(cultural) resources has been utterly undervalued. Options for overcoming of these negative tendencies are discussed.

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# **From the Standpoint of an Ethiopian Plant:**

## **Reflections upon *Radical Sustainability***

by Valentina Peveri - The American University of Rome (AUR) - v.peveri@aur.edu

### **Introduction**

The landscape of my ethnography has been dominated by a root tuber perennial crop [*Ensete ventricosum* (Welw.) Cheesman] which is endemic to Ethiopia. Cultivation practices and culinary patterns characteristic of ensete mirror those for other so-called minor, orphan or underutilized crops which receive little or no attention from research networks, though they play an important role in regional food security. These plants are few, are likely to be perennial garden crops, and, significantly, are tended by women.

The exploration which I have pursued of the life and decline of this virtuous and intelligent plant (and of its human companions) has been guided by a theoretical interest in the concepts of food security, biocultural diversity, and sustainability. However, my approach was to tackle such broad questions by intersecting them with categories that have emerged from my original fieldwork.

The political ecology of ensete agriculture offered to me a strategic entry point into the extended family of perennials. A proximity to perennials has subsequently opened up a reflection upon their potential for becoming active components of a food-secure national landscape. This reflection, in turn, triggered a reconsideration of how ecological combinations that include perennials quietly turn upside-down a farm-centric view of agriculture to make room for alternative spaces (home gardens) and visions of agriculture and sustainability.

The case of ensete is made here to highlight the synergies of a landscape that is ecologically and culturally sustainable. I do so by asking the following question:

- ❖ What are the messages that this particular case study articulates and leaves to us as a durable legacy for further reflection on and good practice of sustainability?

## **Methods**

This contribution draws from my latest book—*The Edible Gardens of Ethiopia. An Ethnographic Journey into Landscapes of Beauty and Hunger*—which is based on more than ten years ethnographic research in Southwestern Ethiopia. Here I will present only a small sample of the empirical data I have co-produced with farmers by taking part in their daily activities and learning from them. Information and insights at the local scale were gained through a variety of approaches—food diaries, participant and household observation, transect walks, semi-structured and key informant interviews.

## **Results**

The most relevant points of this exploration into the ensete garden are as follows:

- ❖ There are traits of root and tuber crops that carry particular weight in shaping human-plant interactions, and may have had a considerable impact on the development of human societies—including the forms of settlement, economy, diet, and social organization.
- ❖ Certain forms of agriculture contain an appreciation of aspects beyond productivity and profitability; are capable of creating abundance from scratch; and aim at realizing wealth in novel ways, namely through valuing renewable resources in the landscape.
- ❖ The active role and ecological stewardship of African small farmers is instrumental in shaping alternative visions of nature and in 'doing' communities of food, agriculture, and cultural identity in the face of climatic and environmental changes.
- ❖ A novel assessment is overdue of what perennial root and tuber crops are, how they differ from annual seed staples, and what the implications of this dichotomy are for human social organization and sustainability.

## **Discussion and Conclusions**

The *longue durée* of ensete cultivation has several implications for rethinking sustainability but here I will retrieve two threads: one has to do with its perenniality, the other with its rootiness.

'Perenniation'—the integration of trees and perennials into fields inhabited by other food crops—has recently emerged as a key strategy in improving land. However, perennials still hold low value in most programs for food crop improvement, where indeed the characteristic of perennality has been neglected or removed through selection for yield. As a result, over time, the role of perennials in food production has diminished. Moreover, the depreciation of specific diets and crops entails that those who produce and procure such foods, the majority of whom are women, are cast down into the same lower status assigned to indigenous crops and food patterns, and are bound under the common stigma of backwardness and poverty. While perennial crops may seem incidental when viewed from a global food security perspective, many are regionally important for subsistence and for research.

Much can be said about smart strategies of coping with and adapting to socio-ecological events from the vantage point of those (both humans and plants) who are 'rooted'. Yet, contrary to grains which are cultivated in open fields and can be easily counted, stored, transported and sold in the market, edible roots and tubers are generally grown and consumed on small farms, thrive in intercropped patches behind the house (home gardens), and remain undercounted or not even measurable. Information gathered at the regional or country levels is likely to underestimate, or not to grasp at all, the political, ecological, and economic complexity of a 'simple' edible garden. This gap is particularly alarming if we consider that root and tuber cultivation systems have more ecological stability than grain systems, and may even be exploited to achieve overall environmental sustainability.

Unmemorable roots, or less glamorous edible perennials, languish in obscurity, and yet they are essential to the daily nourishment of vast numbers of people. The fact that certain crops are remembered and others are forgotten has direct consequences for fields and bodies, for physical and social landscapes.

In an epoch of aggressive commodity marketing on a global scale, I therefore ask: can a focus on the interstitial spaces of tiny garden plots be a revolutionary move in fostering regenerative and sustainable food systems? How could perennality and rootiness build on a model for sustainable livelihoods in a transformational time?

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## **Title of the paper**

Sustainability, who cares? Identifying drivers of farm sustainability performance in organic farms in Switzerland

## **Introduction**

Sustainability has become a muddled term. Increasingly, farmers, processors and food traders are claiming in different ways that their products are produced in a particularly sustainable way. As a consequence voluntary certifications, labels and standards (e.g. SwissGAP, Naturaplan, Organic, M-check, Terra Suisse and Fair Trade), as well as assessment methods (e.g. SALCA sustain, RISE, Life Cycle Sustainability Assessment and Farm Sustainability Assessment), have proliferated greatly in recent years (FAO 2014). These aim to measure, monitor, improve and benchmark products or production systems. Despite these laudable aims, different tools and standards target different aspects of sustainability. This creates division in the dimensions that are assessed (e.g. social, environmental, economic) as well as the detail and type of assessment (qualitatively or quantitatively, product or farm scale, etc.) This increases the risk that improvements in some assessed areas could lead to unseen impacts elsewhere (Schader et al. 2014). As a result, confusion among consumers and decision makers is unavoidable, possibly resulting in greenwashing and unsustainable consumption choices.

To improve transparency, the UN FAO developed the SAFA guidelines (Sustainability Assessment of Food and Agriculture) in an attempt to unify sustainability frameworks into one holistic and globally applicable system of nested dimensions (4), themes (21) and sub-themes (58). These sustainability themes are all defined as objectives that describe an ideal condition. They range from the frequently used (e.g. greenhouse gas emissions) to the uncommon (e.g. cultural diversity), yet each deserves credible assessment under a holistic framework in consideration of the diversity of societal values. To operationalize the SAFA guidelines and framework, the SMART-Farm Tool (Sustainability Monitoring and Assessment Routine) was developed by the Research Institute of Organic Agriculture (FiBL) to facilitate the examination of sustainability claims by such labels and standard as well as provide an independent assessment method for agricultural production systems. The tool is under constant development and applied testing in a range of implementation projects, such as examining the sustainability claims of different standards and labels, comparing production systems and identifying system improvement potentials.

Under one project titled "*Representative sustainability assessment in Swiss organic Bud farms under the SAFA guidelines of the FAO*", a sample of 185 organic farms (3.1% of the national total in 2015) were assessed with the SMART-Farm Tool. This has provided a rich database of information on farm practices and outcomes related to sustainability performance, and delivered detailed reports for each farmer and the project as a whole on sustainability performance. This database offers the valuable opportunity of conducting detailed scientific research into the determinants and drivers of sustainability performance, as well as the limits, trade-offs and synergies in measuring and achieving sustainability.

## **Research questions and aims**

The proposed paper aims to use these data to address three main research questions:

- 1) What is the overall sustainability contribution of organic production in Switzerland according to the targets set by SAFA, and how does this generate trade-offs and synergies across dimensions, themes and sub-themes?

- 2) What are the farm-level determinants of sustainability performance across SAFA themes based on farm structural (e.g. farm size, production system, employees), pedo-climatic/geographic (e.g. climate zone, topography, soil, geographic isolation) and socio-economic factors (e.g. income levels and sources, marketing strategy)?
- 3) What recommendations for best-practice guidelines can be drawn from the research to inform farmers on acceptable and effective improvement measures that strengthen and go beyond organic standards?

## Methods

The SMART-Farm Tool is a multi-criteria assessment model employing over 320 indicators linked to all 58 sub-themes of the SAFA guidelines (Schader et al. 2016). It was applied to 185 representative organic farms covering all major production systems, farm types and locations in Switzerland. For the project, data was analysed on the farm level and summarized for an overall synthesis report. However, to answer our research questions, more in-depth analysis is needed.

To address research question one an overall analysis of the data will be conducted to assess trends in sustainability performance. Synergies and trade-offs will be identified by analysing the relationships between SAFA sub-themes across the sample using correlation analysis in order to assess if, and to what degree, performance increases in one dimension are associated with decreases (trade-off) or increases (synergy) in another. Farms will be classified and clustered based on their performance using multivariable statistics (e.g. PCA, multidimensional scaling) and clustering techniques to identify groups of similarly performing farms that demonstrate particular positive and negative examples.

For research question two, multiple regression will be used to associate a range of explanatory data (production system, agricultural practices, socio-economic variables, climate, location, etc.) with sustainability performance per sub-theme. This will identify the main determinants of performance for each subtheme. In a second step, aggregation methods in multi-criteria decision analysis (MCDA) will be explored to aggregate performance scores and rank farms in each dimension. Again, determinants of these aggregate sustainability scores per dimension will be correlated with explanatory data.

For the third research question, the results above will be used to identify key improvement measures at the farm level. This will take into account the findings on overall trade-offs/synergies (research question 1) the determinants of sustainability (research question 2) to deliver measures that have the highest net-positive effects, while being relevant and achievable for farmers.

## Results

The proposed research delivers highly relevant information on the contribution to and drivers of farm sustainability in the Swiss organic sector. Preliminary results indicate that overall, the organic sector performs very well across many SAFA sub-themes (Figure 1). Correlation analysis of performance across sub-themes indicate strong synergies among sub-themes in the environmental dimension relating to materials and energy, biodiversity and climate (S26-S16; Figure 2). In terms of trade-offs, there was a cluster of negative correlations between certain economic sub-themes (S41-43; Figure 2) and the environmental dimension. In terms of production system, energy consumption was higher for the production of special crops and milk production than other systems. Biodiversity was lowest for arable crops production (data not shown). Extensive farms appear to perform well due to high proportions of grassland and lower workloads. In addition, geographic location appears to influence sustainability: farms in the mountain areas perform better in the environmental SAFA themes atmosphere and water.

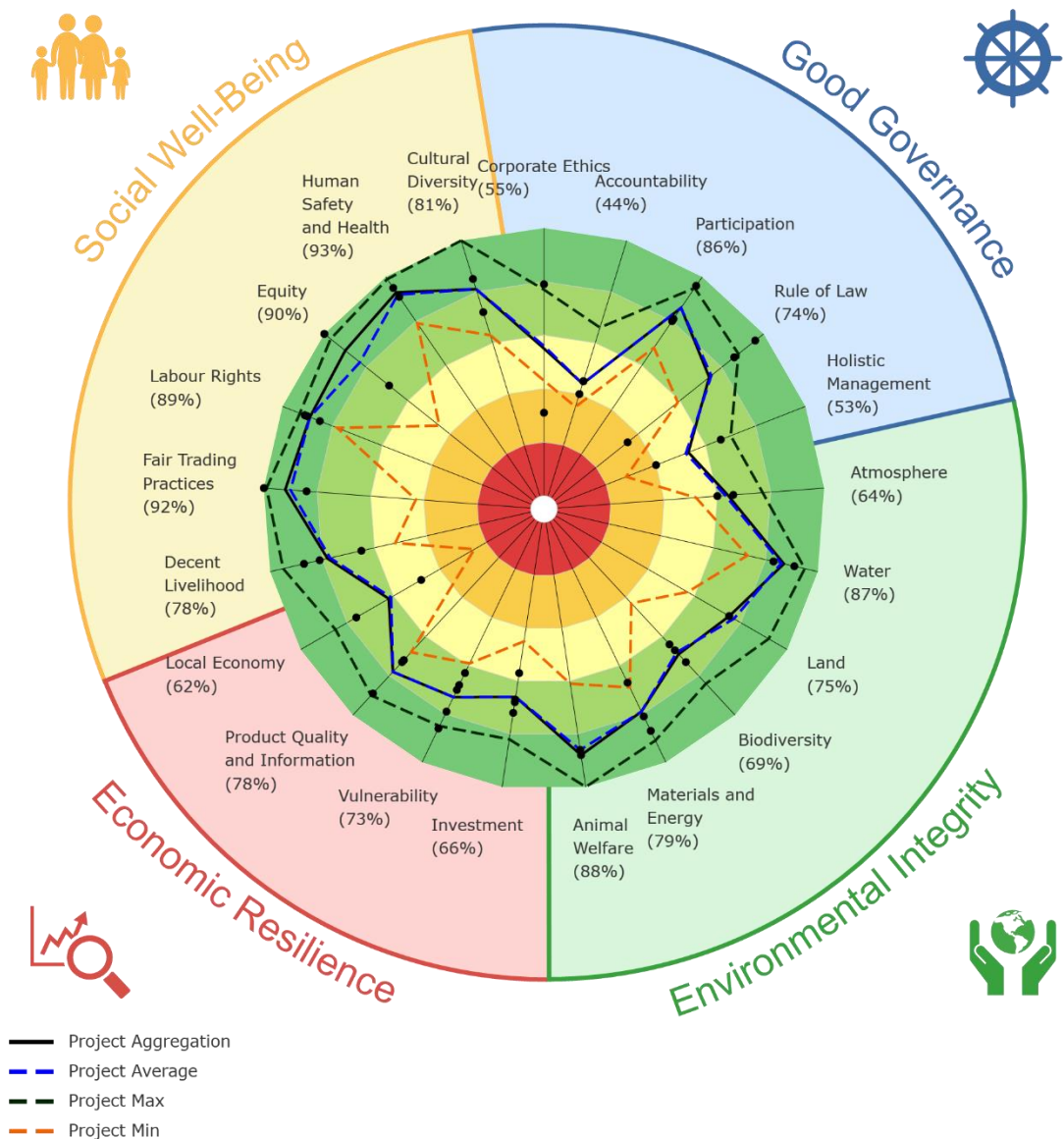


Figure 1. Sustainability polygon of the entire sample of farms. Results are aggregated to 21 SAFA themes (21) across four dimensions. Project Aggregation = median values across farms.

## Discussion

Holistic farm-level sustainability assessments enable the identification of trade-offs and synergies between sustainability dimensions and topics. This is relevant to guide transformation towards more sustainable food systems. Beyond these preliminary results, the research will identify the main drivers for the subtheme performances and concretize these results with best-practice recommendations, e.g. local sourcing of external inputs. These resulting measures are valuable contributions to the efforts to develop practicable strategies towards more sustainable food production systems.





**On-farm and regional factors affecting the decision of direct selling in Italy.**

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In the last twenty years the study of alternative food networks (AFNs) has gained growing attention. AFNs rely on mechanisms such as farmers' markets, community supported agriculture, direct sale on the farm, informal groups of consumers, community gardens, vegetable box schemes, etc.

In this paper, we study the on-farm and regional factors affecting the farmer's choice to directly sell their products to the consumers in Italy, on and off farm. Using a different approach to previous studies we use micro-data on the entire farm population in Italy which is available from the Census of Agriculture carried out by Istat (Istituto Nazionale di Statistica) in 2010 (about 1,653,000 farms), which is to say that we have information on every single farm in Italy. The analysis of the entire farms population allows us to go beyond the dichotomy between conventional and alternative because if it is true that direct sale is described in the literature as a typical feature of AFNs (Sonnino and Marsden, 2006; Donald et al., 2010), it also true that it often takes place in very conventional farms and today it is not anymore a niche farm strategy but rather a marketing strategy within an evolving agri-food system. The Census Questionnaire asks the respondents to quantify the share of different marketing channels, including on-farm and off-farm direct selling to consumers. We use this information to understand determinants of direct sale strategies.

In order to understand the determinants of direct sale strategies, we will test two sets of variables. The first considers on-farm characteristics both in terms of structural features (such as farm size, farm type and utilization of hired work) and the farmer's subjective characteristics (such as age, sex and education). The second group of variables addresses the geographical, social and economic context of the farm's location.

In this paper we argue that geography plays an important role in determining farmers choices. In our view, geography is not only a factor of differentiation of competitive space, but also a driver of different trajectories in regional development. Also the empirical setting of the analysis reflects our focus on the geographic determinants of farmers' choices as we estimate our model adopting a multi-level approach (including municipality, province and regional level) that allows us

to better capture, besides the impact of on-farm characteristics, also the influence of the geographic context where each firm operates. Moreover, we pay great attention to the spatial dimension of data, also including in the regressions spatially lagged variables, acknowledging that the characteristics of the neighbouring areas are also important.

The research questions that this paper then answers are: Which farm and/or farmer characteristics increase the probability of directly sale their products? Which regional context and characteristics positively affect the farmers' decision to start a direct sale?

We are able to present here some preliminary results. A first set of factors fostering the transition are the specific farmers' and farm's characteristics. To be competitive in a re-localised agro-food system the farmer needs some selected capabilities such as the use of IT. These capabilities appear to depend more on the farmer's field of education than on farmer age and, in particular, a specific knowledge of production methods accessed through secondary and tertiary education in agricultural studies. From this point of view the path towards a more sustainable food system appears to be a social phenomenon deeply shaped by the peculiar characteristics of agriculture as a production process.

The fact that small farms and organic farms are more likely to join AFNs may suggest that the transition towards a re-localised food supply is the outcome of a broad process of change propelled by a diversity of social, ethical and cultural rules and values. At an early stage of development, large industrial farms are less interested in entering these new niche markets. Furthermore, the results may also suggest that large farms do not have the right reputation according to conventions of quality governing transactions in the AFNs and possibly that their hierarchical internal organization doesn't allow them to share the relevant knowledge about food the consumers are looking for.

A second set of factors that can foster the transition are embedded in the geographical context where the farm is located. The role of FMs and SPGs is relevant (confirming Hypo 1 and 5), and positively affect the decision of farmers to enter AFNs.

We believe that, in an early stage of development, these "spaces" of interaction among producers and consumers have a greater effect on the diffusion of the innovation (direct selling) and of the knowledge related to it than the increase of local demand. The geographical proximity facilitates the circulation of knowledge required to foster such a co-produced innovation process. A farm located in such a geographical context, run by a farmer with a high absorptive capacity and a cognitive proximity, has more probability to step into AFNs.

Population density has a positive effect at the municipality level (confirming our Hypo 7), while the spatially lagged coefficient is not significant. This result confirms the strategic role of networking within innovative spaces and with skilled consumers rather than the access of a mass consumption that probably will continue to refer to large retailers. These insights support the idea that the diffusion among farmers of direct sale strategies is a localised process of social innovation, based mainly on knowledge sharing among actors (farmers, consumers, local institutions).

Within this process of growth what is the role of the current sector policies? The results of our analysis suggest a controversial outcome of the European CAP at the farm level, showing that the more the direct payments become an important share of farm receipts, the more the inclination to innovate marketing channels declines. In addition, the non-significant coefficients related to the expenditure intensity both for the First and the Second Pillar provide evidence that the geographical distribution of CAP support is unlikely to counterbalance the lock-in mechanism working at the farm level. The current CAP policy is still mainly designed to support larger industrial farms in plain areas (such as Pianura Padana in Italy).

Where the policy is less effective in transmitting the economic incentives, as in hill and mountain areas, small and organic farms are more successful in the transition towards alternative forms of food supply chain, due to the mutual support and trust with municipalities and local communities (of which FM and SPG variables can be considered a proxy). The main policy lesson is that an effective promotion of a multifunctional agriculture should create spaces of opportunity to market "non-commodity outputs" that are a joint output of farming, such as environmental sustainability or local cultures on food. Such a result is more likely to be pursued by a policy designed to spread the relevant knowledge and enhance the institutional framework for local initiatives rather than by the direct monetary support of farm income.

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## **The contribution of Australian alternative food networks to sustainable food consumption practices**

**Leticia Canal Vieira<sup>1</sup>**

Supermarkets linked to global supply chains dominate the Australian food system and have a higher influence on shaping people's habits and diets (Pulker et al., 2019). They belong to the "food from nowhere" regime that relates food consumption to cheapness and convenience and is often disconnected from cultural and emotional aspects (Campbell, 2009). In a different fashion, Alternative food networks (AFNs) are fringe players operating outside corporate controlled supply chains with the goal of enhancing fairness in Australian food systems (Dixon and Richards, 2016). The distinctive operational practices and values of AFNs create a sustainable relationship with food provision.

A case study was conducted between the months of July and October 2018 with nine initiatives to investigate key aspects of the sustainable relationship with food present in Australian AFNs. The data collection consisted of the gathering of information and documents available in websites and social media, 23 semi-structured interviews, and visits to the sites of operation (when applicable). The AFNs that participated can be classified as urban agriculture initiatives, buyers' groups, food hubs, specialist retailer, and pop-up market. Half of them have less than five years of existence and have a not-for-profit structure. They are in their majority run by a group of no more than four people and count with the support of volunteers. The scale of AFNs that participated are small when compared with similar initiatives in the USA or Europe (Fonte, 2013; Moragues-Faus, 2017).

The analysis of the sustainable relationship with food from AFNs revealed four main aspects shaping it: the adoption of a seasonal food supply; the availability of foods that can't be found in supermarkets; the reconnection with food growth; and the rejection of

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aesthetic standards. The adoption of seasonal food supply is the main aspect that shapes the different food provision relationship from AFNs. Founders of AFNs recognise the environmental and the health value of eating seasonal food and members are interested on learning about seasonality. This connection with seasonality helps members to remember that food is the product of natural processes. Therefore, food is not viewed merely as a commodity subjectable to economic profit. This is an approach that differs in a great deal from the idea that a certain kind of produce should be available at all times. Interviewees reported that seasonality also stimulated them to build capacity to adapt their diets. Balázs et al. (2016) also found out that the seasonal supply of a box scheme was acting as a learning tool for consumers.

AFNs often have available food that differs from what is offered in supermarkets. AFNs are increasing access to diversified products by incorporating bushfoods. Bushfoods are native varieties of food normally know by aboriginals' elders but that are often unfamiliar to urban Australians. By increasing the knowledge on bushfoods, AFNs are helping to create a local food identity. Moreover, the production and consumption of edible weeds are encouraged. Members of an urban agriculture initiative in Melbourne run tours to teach people about edible weeds available at the city. Urban gardens are also used to grow food varieties unavailable in supermarkets, be it to enable access to a culturally appropriated diet or making the most of the local climate. The growing and offering of different products fosters biodiversity, something key to sustainable food systems (Willett et al., 2019).

AFNs are also helping people to reconnect with food growth and the real appearance of food. Members of urban agriculture initiatives reported that often people who have always lived in urban areas do not know how certain foods are grown or how labour intensive it can be. The involvement with urban agriculture has made people recognise the value of farmers works and change their food price assumptions. Aesthetic standards are adopted by Australian supermarket chains and have influenced the image that people have from food. Aesthetic standards are not followed by AFNs that are sourcing produce in all shapes and sizes, a practice that helps to reduce food waste. Interviewees said that after consuming from AFNs the symmetrical fresh food in the supermarket looks unnatural.



The food from nowhere regime might have shaped the mindset of a whole generation around food but it is not irreversible. AFNs emerged inside this setting and are helping to construct a more sustainable relationship with food consumption. There is still a parcel of people that engage with AFNs and are not impacted by their ethos. Regardless, their capacity to teach about seasonality, introduce new types of fruits and vegetables in people's diets, and change food aesthetic standards, should not be discredited. In the Australian case, it does not seem that AFNs potential for sustainable transformations is the limiting factor in the process of changing people's relationship with food. In reality, what still marginal is the governmental support that they receive. So far, expansion has happened by cooperation among AFNs and support from local communities. More favourable policy contexts and governments incentives could change this reality. Action is needed not only in the form of direct support to AFNs, but also by the establishment of regulations seeking to make all food system players accountable for social, environmental, and health impacts created.

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