Citizen science in supporting food policy making

Webinar: Sustainable and healthy living environments: How to mobilize citizens' knowledge?

Wed 25/05/2022

17:30-19:30 (Finland)

Dr Christian Reynolds

Centre for Food Policy, City, University of London

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Centre for Food Policy

Shaping an effective food system

Who am I?

Senior Lecturer at the Centre for Food Policy

wrap · STFC Food Network+ · N8 AgriFood

University of South Australia · University of Aberdeen · The University Of Sheffield. Institute for Sustainable Food. · UK Data Service

Focus: healthy sustainable diets and food consumption (including waste)

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

Review

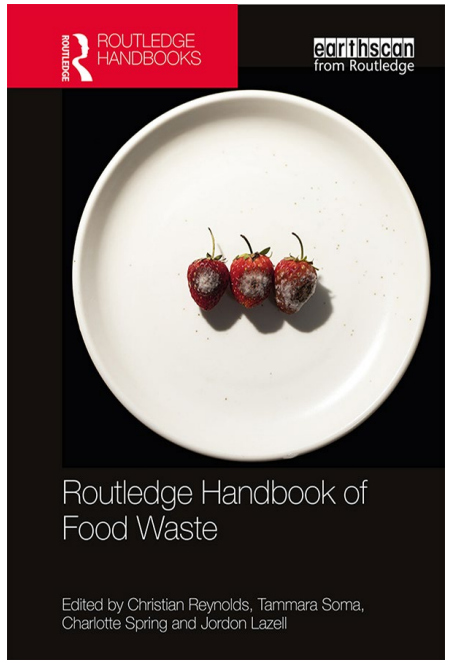
Review: Consumption-stage food waste reduction interventions – What works and how to design better interventions

Christian Reynolds[a,b,*], Liam Goucher[c], Tom Quested[b], Sarah Bromley[b], Sam Gillick[b], Victoria K. Wells[d], David Evans[e], Lenny Koh[c], Annika Carlsson Kanyama[f], Cecilia Katzeff[g], Åsa Svenfelt[f], Peter Jackson[a]

Public Health Nutrition: 22(8), 1503–1517 doi:10.1017/S1368980018003774

Healthy and sustainable diets that meet greenhouse gas emission reduction targets and are affordable for different income groups in the UK

Christian J Reynolds[1], Graham W Horgan[2], Stephen Whybrow[1] and Jennie I Macdiarmid[1,*]
[1]The Rowett Institute University of Aberdeen, Aberdeen AB25 2ZD, UK: [2]Biomathematics & Statistics Scotland, Aberdeen,UK



Previously: Food waste politics/history, social sciences approaches

Shameless plug for FLW text book – if you want free access let me know ☺

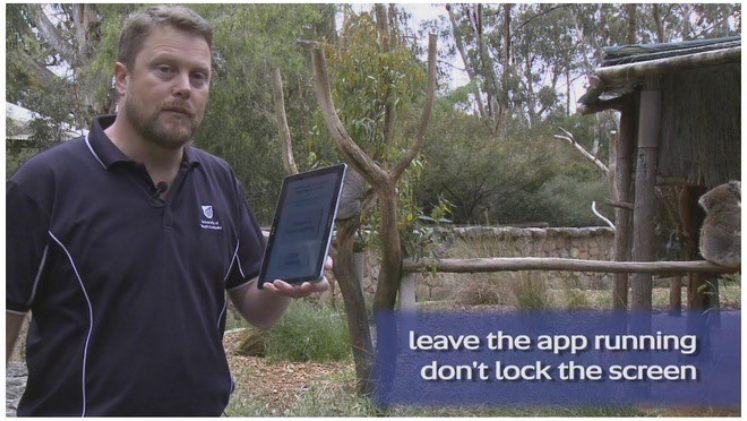
How I got into Citizen Science

2012-2014

Great Koala Count II

University of South Australia

Operation Magpie

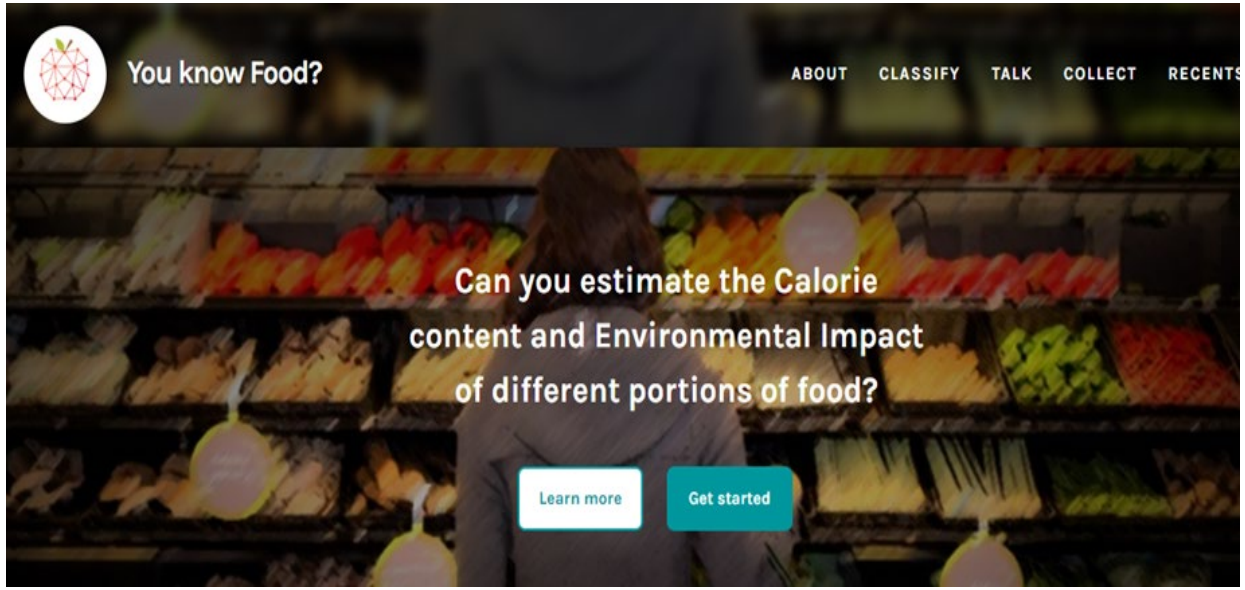


Dr Philip Roetman from the University of South Australia demonstrates the Koala Counting app

2018-2020

STFC Food Network+

ZOONIVERSE



Part of ongoing research…

frontiers in Sustainable Food Systems

PERSPECTIVE
published: 20 September 2021
doi: 10.3389/fsufs.2021.596594

The Importance of Citizen Scientists in the Move Towards Sustainable Diets and a Sustainable Food System

Libby Oakden[1], Gemma Bridge[2], Beth Armstrong[3], Christian Reynolds[3,4]*, Changqiong Wang[5], Luca Panzone[6], Ximena Schmidt Rivera[7], Astrid Kause[8], Charles Ffoulkes[9], Coleman Krawczyk[10], Grant Miller[11] and Stephen Serjeant[12,13]

https://doi.org/10.3389/fsufs.2021.596594

frontiers in Sustainable Food Systems

ORIGINAL RESEARCH
published: 08 December 2020
doi: 10.3389/fsufs.2020.589089

Citizen Science for Quantifying and Reducing Food Loss and Food Waste

Rachel M. Pateman[1]*, Annemarieke de Bruin[1], Evelin Piirsalu[2], Christian Reynolds[3,4], Emilie Stokeld[1] and Sarah E. West[1]

[1] Stockholm Environment Institute, Department of Environment and Geography, University of York, York, United Kingdom, [2] Stockholm Environment Institute Tallinn Center, Tallinn, Estonia, [3] Department of Geography, University of Sheffield, Sheffield, United Kingdom, [4] Centre for Food Policy, City, University of London, London, United Kingdom

https://doi.org/10.3389/fsufs.2020.589089

Cultures of engagement

Citizen science for the food system

Christian Reynolds, Libby Oakden, Sarah West, Rachel Pateman, Chris Elliott, Beth Armstrong, Rebecca Gillespie and Michelle Patel

The food system is hugely complex, encompassing many different actors, geographic areas and cultural contexts. Although the citizen science literature related to food and food systems is concentrated primarily on a few key areas of this complex system (i.e. on health and food production); citizen science has the potential to help address many grand challenges related to food and agriculture.

In this chapter we make use of multiple desk-based reviews of the literature, and draw on our own experiences of citizen science projects. We provide examples of existing citizen science projects in the UK (as well as global initiatives) that can be adapted for use to help address food policy areas of research interest. We conclude that making use of citizen science approaches in food policy reseaarch can help the transition toward a more equitable and sustainable food and agriculture system.

Why citizen science is particularly relevant to food and food policy

Food is a universal connection between people. What and how we eat, farm, cook, and produce affects us on individual, community and societal levels. Supplying safe, secure, affordable, sustainable, and nutritious food is a major challenge to all the different parts of a local and global system. Food is also ubiquitous and mundane, with many day-to-day food practices carried out as an unconscious routine. It is also deeply cultural and historic,

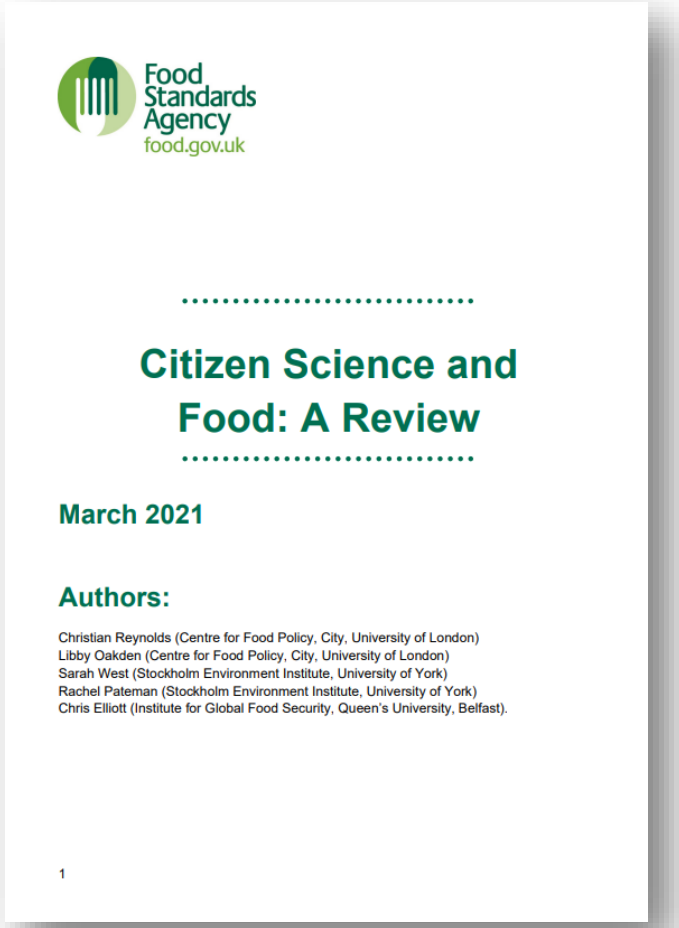
55

FUTURE DIRECTIONS FOR CITIZEN SCIENCE AND PUBLIC POLICY

Edited by Katie Cohen and Robert Doubleday
Centre for Science and Policy
June 2021

CSaP

https://www.csap.cam.ac.uk/media/uploads/files/1/future-directions-for-citizen-science-and-public-policy-web-v6.pdf



Food Standards Agency
food.gov.uk

Citizen Science and Food: A Review

March 2021

Authors:

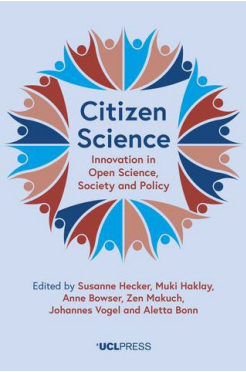
Christian Reynolds (Centre for Food Policy, City, University of London)
Libby Oakden (Centre for Food Policy, City, University of London)
Sarah West (Stockholm Environment Institute, University of York)
Rachel Pateman (Stockholm Environment Institute, University of York)
Chris Elliott (Institute for Global Food Security, Queen's University, Belfast).

1

https://www.food.gov.uk/sites/default/files/media/document/citizen-science-and-food_a-review_26mar.pdf

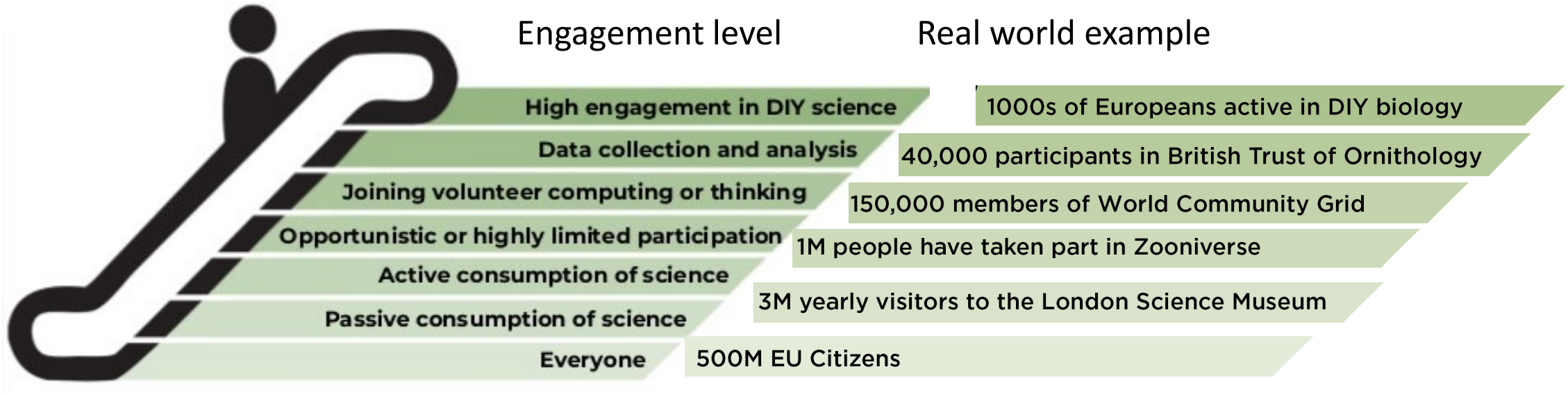
Citizen Science – what is it?

- Research where public citizens **participate** as investigators in research projects alongside professional scientists.
- Citizen science **engages** a diversity of publics (Sauermann et al., 2020) **enabled** by scientists who are advocates (Stilgoe, 2009) is a powerful collaborative approach.
- This is not only about engaging widely, but also about bringing fresh perspectives, solutions and enable a faster and smoother uptake.



For more information please read:
Robinson L.D., Cawthray, J.L., West, S.E., Bonn, A., & Ansine, J. (2018). *Ten principles of citizen science*. In S. Hecker, M. Haklay, A. Bowser, Z. Makuch, J. Vogel, & A. Bonn. *Citizen Science: Innovation in Open Science, Society and Policy*. London, UCL Press. 1–23.

The ‘escalator’ model of science engagement. Many levels can engage with the policy process.

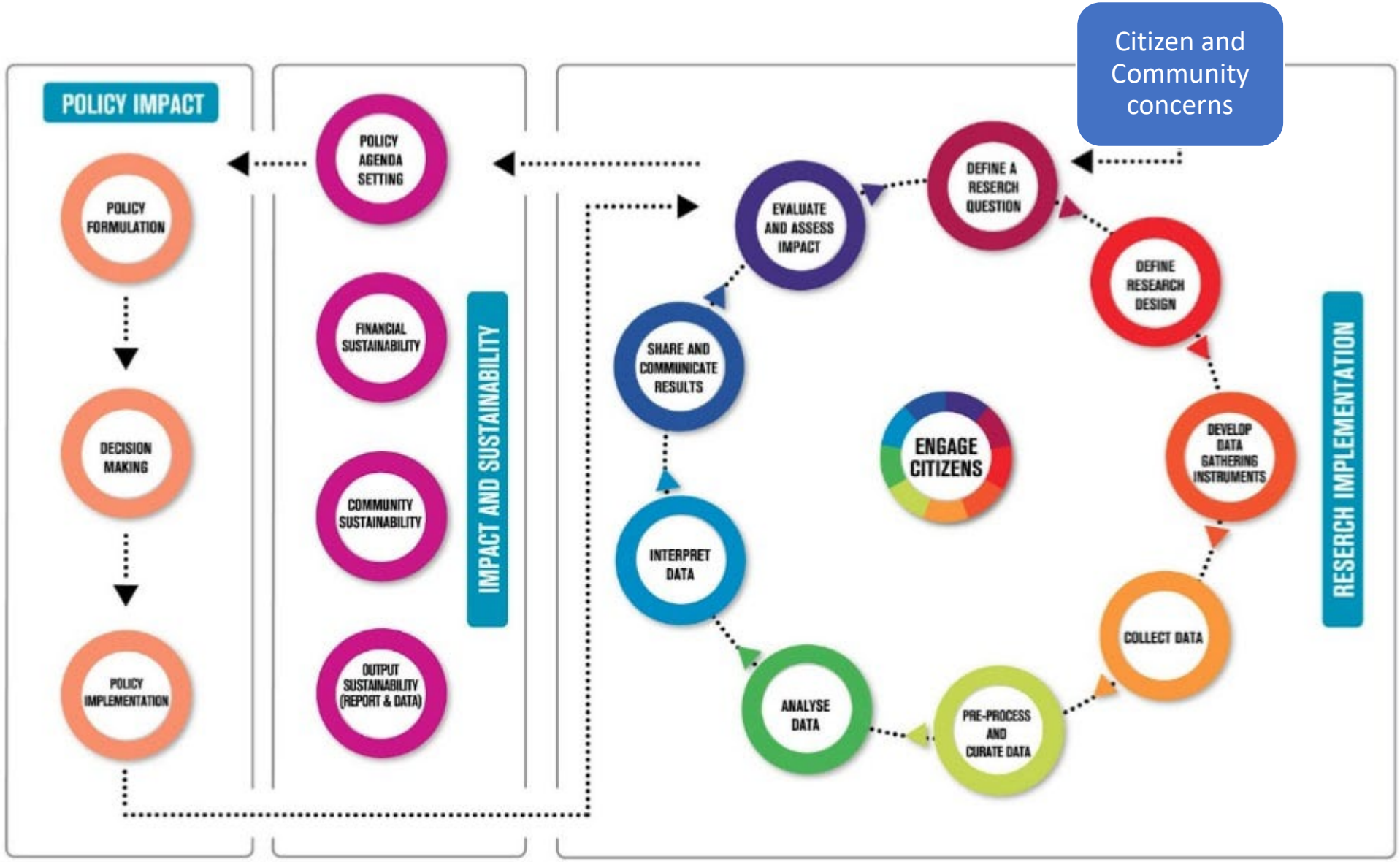


Source - Doing It Together Science – an EU citizen science project

Levels of Citizen Science

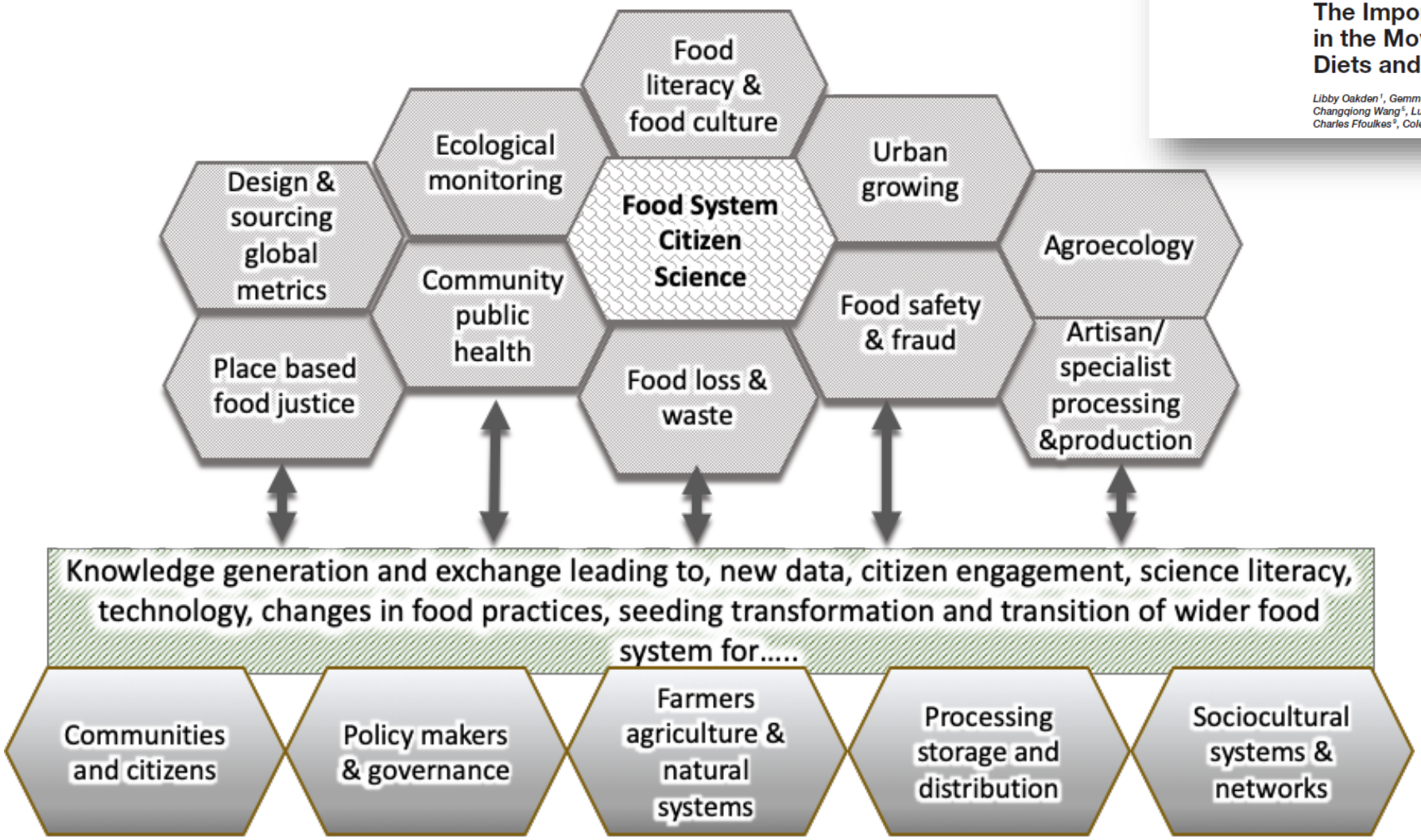
Level 4 ‘Extreme’	• Collaborative Science – problem definition, data collection and analysis
Level 3 ‘Participatory science’	• Participation in problem definition and data collection
Level 2 ‘Distributed Intelligence’	• Citizens as basic interpreters
Level 1 ‘Crowdsourcing’	• Citizens as sensors

Logic map: Citizens to Policy Impact



Adapted from https://actionproject.eu/toolkit/ and https://citizensciencezurich.blog/2021/11/16/citizen-science-for-specific-policy-issues/

Food and Citizen Science

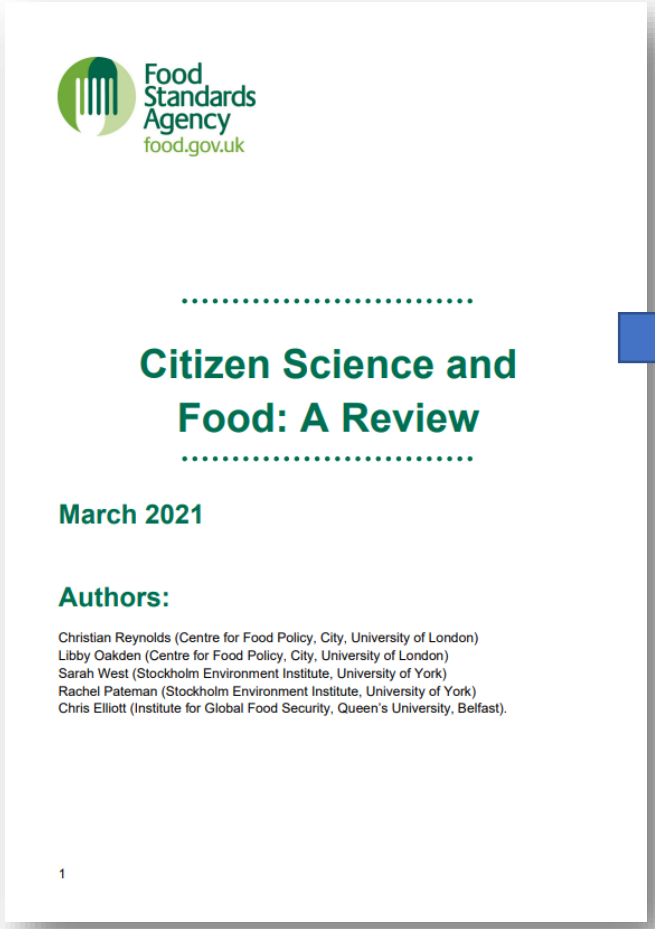


Citizen science engagement with the food system and impact pathways

https://doi.org/10.3389/fsufs.2021.596594

Food Standards Agency and Citizen Science

A new research agenda with Citizen Science.


Food Standards Agency
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https://www.food.gov.uk/sites/default/files/media/document/citizen-science-and-food_a-review_26mar.pdf

NEWS

FSA and UKRI join forces with the public to explore food safety

The Food Standards Agency (FSA) and UK Research and Innovation (UKRI) are awarding a total of £200,000 to fund six projects to bring the public and researchers together to investigate food standards challenges.

Last updated: 16 November 2021 View as PDF Print this page

New pilot projects for 2022

- **Citizen science and antimicrobial resistance** - Dr Sarah West, University of York
- **Finding the right formula – establishing the feasibility of doing science in the home to assess the safety of Powdered Infant Formula preparation** - Dr Aimee Grant, Swansea University
- **Food allergy awareness champions: Towards improving food safety standards in online food procurement for people with food hypersensitivity -** Dr Tassos Koidis, Institute for Global Food Security, Queen's University Belfast
- **Exploring the chopping board microbiome** - Dr Alan Goddard, Aston University
- **Engaging food hypersensitive communities in citizen science** - Prof Julie Barnett, University of Bath
- **Using citizen science to explore plant breeding and investigate food-chain transparency for novel breeding methods -** Dr Gulbanu Kaptan, University of Leeds

Wider examples

- Ecological monitoring
- Urban Growing
- Artisanal/ Specialist Food Processing & Production
- Food Safety & Fraud
- Food waste

Ecological monitoring

- School children scientists in a project to monitor soil health
- Mussel pathogen survey to monitor local toxins, collected samples and also carried out sample analysis, allowing survey sites number to rise from 60 to 108.
- Local Environmental Observer (LEO) is a community situated network that started in Alaska. This group has tested for food pathogens, and monitored for advanced permafrost melting, to safeguard household and community food storage depots

Pedobiologia - Journal of Soil Ecology 67 (2018) 1–9

Contents lists available at ScienceDirect

Pedobiologia - Journal of Soil Ecology

journal homepage: www.elsevier.com/locate/pedobi

Using data from schools to model variation in soil invertebrates across the UK: The importance of weather, climate, season and habitat

B. Martay[a,*], J.W. Pearce-Higgins[a,b]

[a] British Trust for Ornithology, The Nunnery, Thetford, IP24 2PU, UK
[b] Conservation Science Group, Department of Zoology, University of Cambridge, Downing Street, Cambridge, CB2 3EJ, UK

ARTICLE INFO

Keywords:
Soil
Invertebrates
Earthworms
Climate
Citizen science
Rainfall

ABSTRACT

Soil invertebrates play important roles in climate regulation. It is likely that climat of information about how soil invertebr jections difficult. To address this gap, we the abundance of soil macro-invertebrat The abundance and biomass of twelv dised protocols on six occasions over tw habitat and soil characteristics, and wea The abundance of many soil invertebr that the abundance and biomass of earth little evidence that large-scale variation i climate.

Given the importance of earthworms undertake nutrient cycling and the pros analyses of the impacts of climate change of rain, rather than monthly or seasonal

Our results were generally in accord quality assurance. This indicates that th vertebrates and that it is possible to utili data collection. Not only can this deliver the collection of scientifically valuable d

Washington Department of FISH AND WILDLIFE

Puget Sound Ecosystem Monitoring Program (PSEMP)

Mussel Watch Pilot Expansion 2012/2013: a study of toxic contaminants in blue mussels (*Mytilus trossulus*) from Puget Sound Washington, USA

Field Sample Summary and Progress Report
February 19, 2013

Jennifer A. Lanksbury, Andrea J. Carey, Laurie A. Niewolny and James E. West

One Health 6 (2018) 29–33

Contents lists available at ScienceDirect

One Health

journal homepage: www.elsevier.com/locate/onehlt

Environmental observation, social media, and One Health action: A description of the Local Environmental Observer (LEO) Network

Emily Mosites[a,*], Erica Lujan[b], Michael Brook[b], Michael Brubaker[b], Desirae Roehl[b], Moses Tcheripanoff[b], Thomas Hennessy[a]

[a] Arctic Investigations Program, Division of Preparedness and Emerging Infections, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Anchorage, AK, United States
[b] Center for Climate and Health, Alaska Native Tribal Health Consortium, Anchorage, AK, United States

ARTICLE INFO

Keywords:
Arctic
One Health action
Citizen science
Social media
Environmental health

ABSTRACT

As a result of the close relationships between Arctic residents and the environment, climate change has a disproportionate impact on Arctic communities. Despite the need for One Health responses to climate change, environmental monitoring is difficult to conduct in Arctic regions. The Local Environmental Observer (LEO) Network is a global social media network that recruits citizen scientists to collect environmental observations on social media. We examined the processes of the LEO Network, numbers of members and observations, and three case studies that depict One Health action enabled by the system. From February 2012 to July 2017, the LEO Network gained 1870 members in 35 countries. In this time period, 670 environmental observations were posted. Examples that resulted in One Health action include those involving food sources, wild fire smoke, and thawing permafrost. The LEO network is an example of a One Health resource that stimulates action to protect the health of communities around the world.

Urban Growing

- Citizens generated data on the suitability of growing conditions in different geographies for up to 10 lines of soya bean plants, aiming to reduce reliance on imported soya
- MY Harvest initiative is investigating the geography of urban food growing, examining the scale of urban cultivation and yields in Leicester and across the UK.

Theoretical and Applied Genetics (2019) 132:617–626
https://doi.org/10.1007/s00122-018-3134-2

ORIGINAL ARTICLE

The soybean experiment '1000 Gardens': a case study of citizen science for research, education, and beyond

Tobias Würschum[1] · Willmar L. Leiser[1] · Felix Jähne[1] · Kristina Bachteler[2] · Martin Miersch[2] · Volker Hahn[1]

Received: 26 January 2018 / Accepted: 21 June 2018 / Published online: 3 July 2018

Abstract
Key message **C**
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Science of the Total Environment 705 (2020) 135930

Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

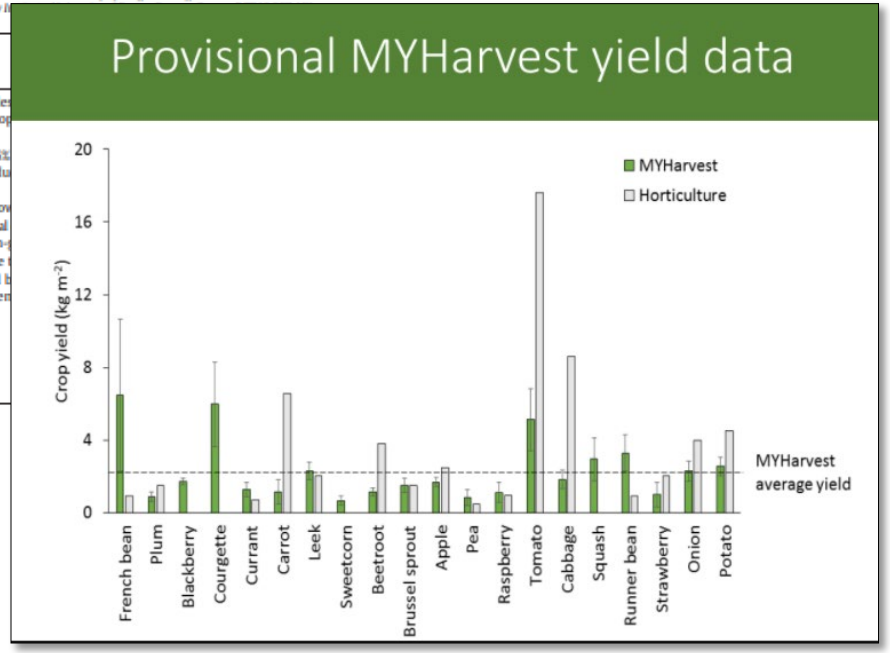
Feeding a city – Leicester as a case study of the importance of allotments for horticultural production in the UK

Jill L. Edmondson [a,*], Dylan Z. Childs [a], Miriam C. Dobson [a], Kevin J. Gaston [b], Philip H. Warren [a], Jonathan R. Leake [a]

[a] Department of Animal and Plant Sciences, University of Sheffield, Sheffield S10 2TN, UK
[b] Environment and Sustainability I

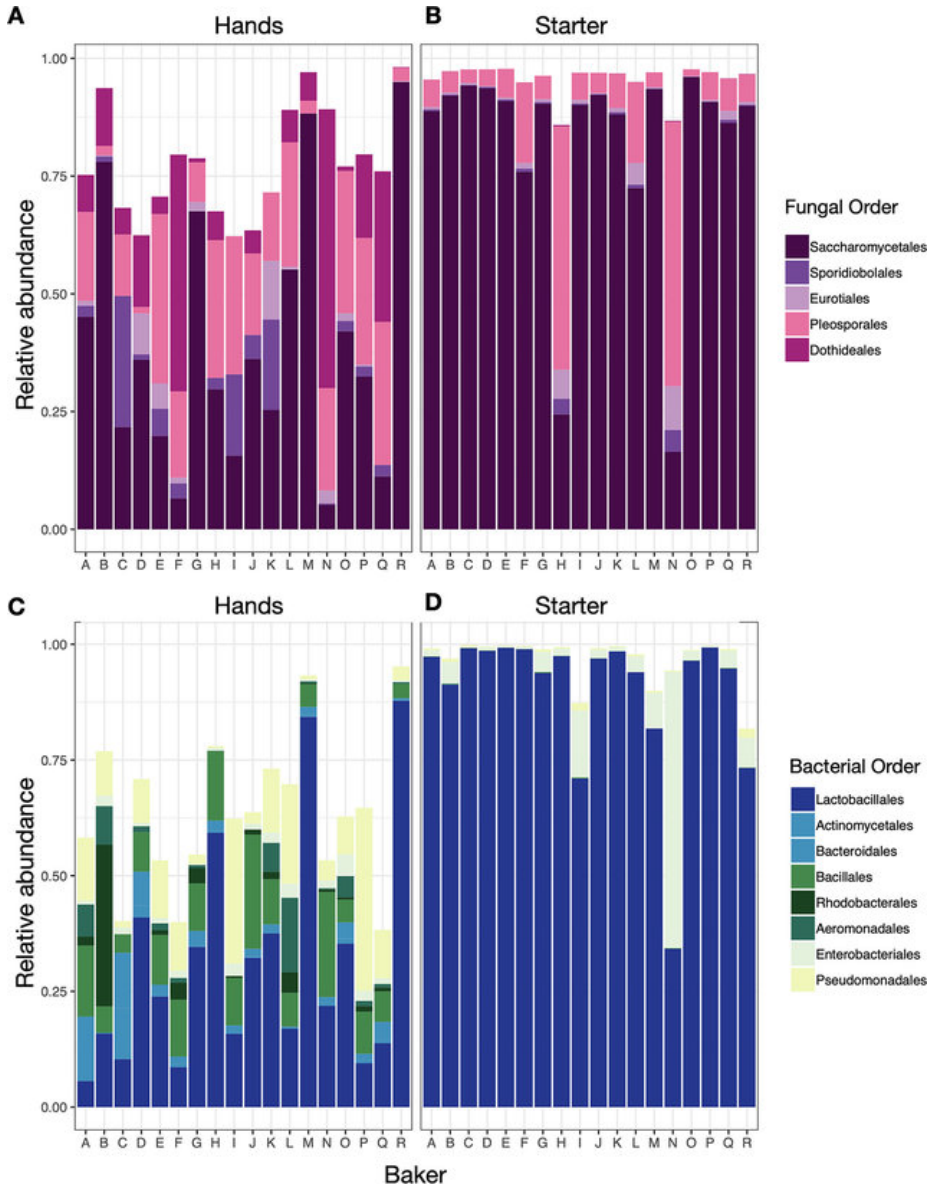
HIGHLIGHTS

- Urban agriculture provides ecosystem services to peop cities.
- Allotment gardening in 1.5% a city provides fresh produ population.
- Crop yields achieved by ow were similar to commercial
- Availability of land for own- significantly declined since
- Urban food security could b by providing more allotmen



Artisanal/ Specialist Food Processing & Production

- Peer networks and by experts (e.g. brewers or bakers)
- Commercial food substitute Soylent
- ‘biohackers’ such as Real Vegan Cheese biohacking group (Wilbanks, 2017) or the Shojin Meat project.



AMERICAN SOCIETY FOR MICROBIOLOGY | mSphere®

RESEARCH ARTICLE
Applied and Environmental Science

Influences of Ingredients and Bakers on the Bacteria and Fungi in Sourdough Starters and Bread

Aspen T. Reese,[a] Anne A. Madden,[b] Marie Joossens,[c,d,e] Guylaine Lacaze,[f] Robert R. Dunn[b,g,h]

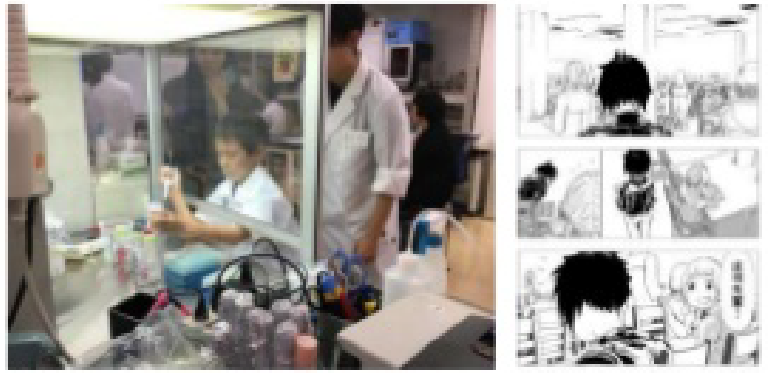
Artisanal/ Specialist Food Processing & Production

“Shojinmeat Project” - Who we are

“Democratization of cellular agriculture”

Nonprofit non-corporate non-university citizen science community of DIY bio/fab enthusiasts, students, researcher, artists, writers etc. for cellular agriculture

Open source cellular agriculture” by DIY bio



Public communication by art and education

Food Safety & Fraud

- Allergen testing, food spoilage etc.

See https://theanalyticalscientist.com/fields-applications/citizen-science-and-food-safety

- 'Citizen Radioactivity Monitoring stations' – Japan post Fukushima

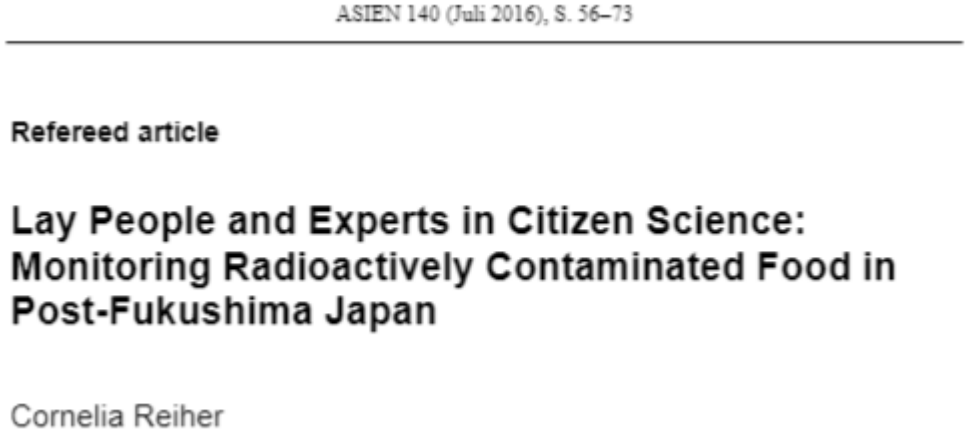
Analytical and Bioanalytical Chemistry
https://doi.org/10.1007/s00216-018-0989-7

REVIEW

Consumer-friendly food allergen detection: moving towards smartphone-based immunoassays

Georgina M. S. Ross[1] · Monique G. E. G. Bremer[1] · Michel W. F. Nielen[1,2]

Received: 29 December 2017 / Revised: 14 February 2018 / Accepted: 26 February 2018
© The Author(s) 2018



ASIEN 140 (Juli 2016), S. 56–73

Refereed article

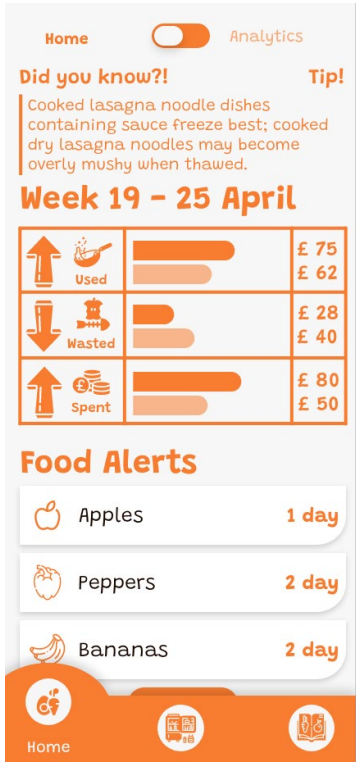
Lay People and Experts in Citizen Science: Monitoring Radioactively Contaminated Food in Post-Fukushima Japan

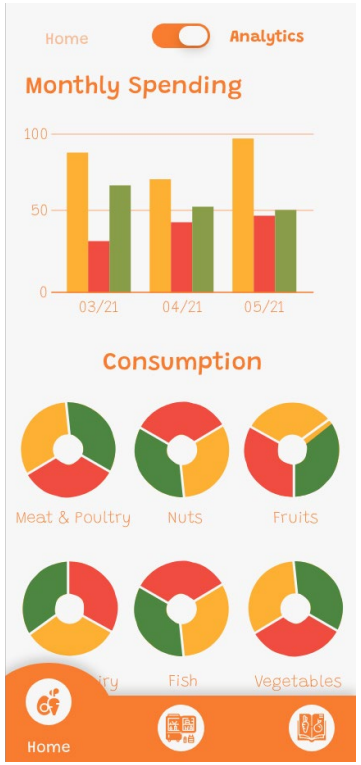
Cornelia Reiher

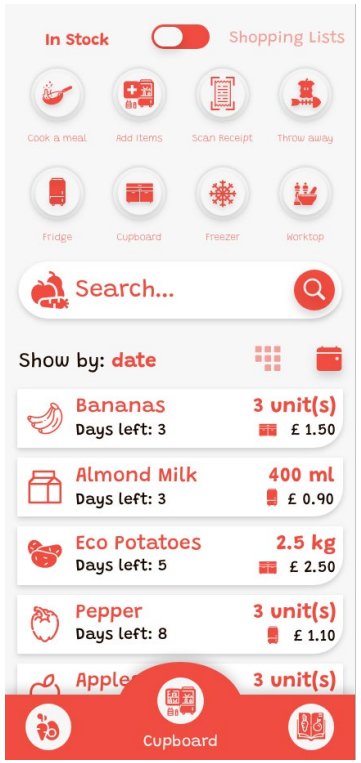
Food waste - Apps for Students (2021-2022)

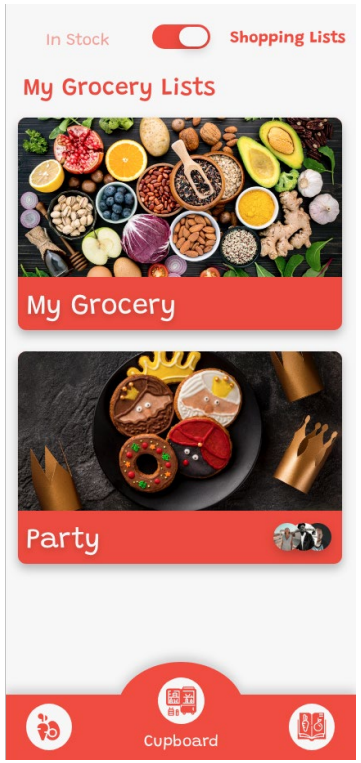
Funded by WRAP Food Waste Behaviour change grant

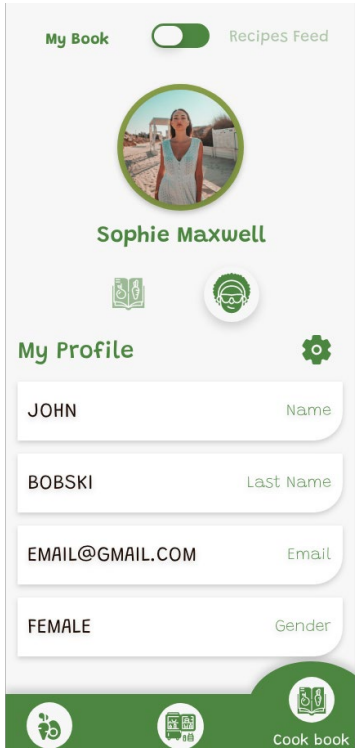
894 unique users of the Gub Gub app over 10 weeks at University of Sheffield









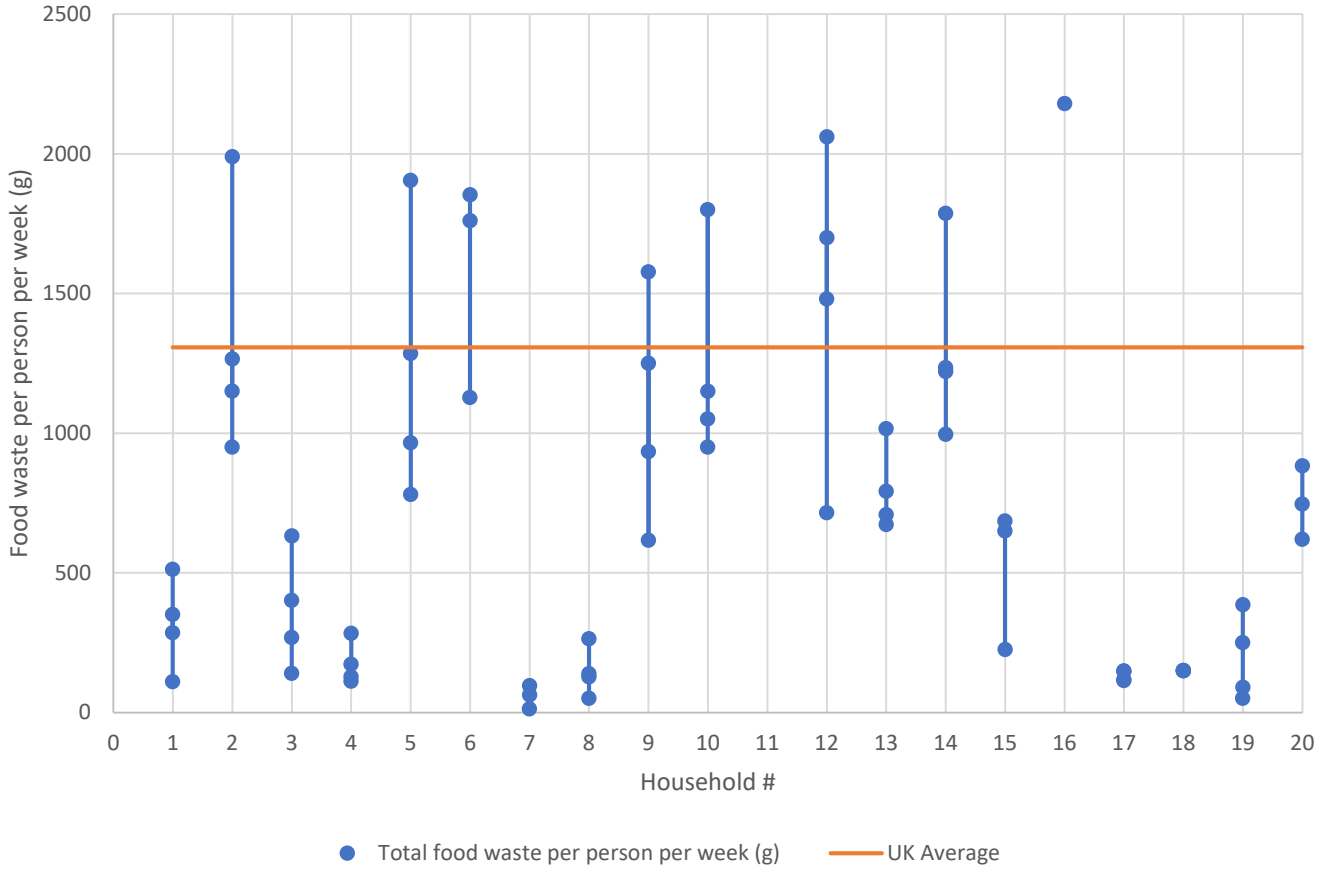


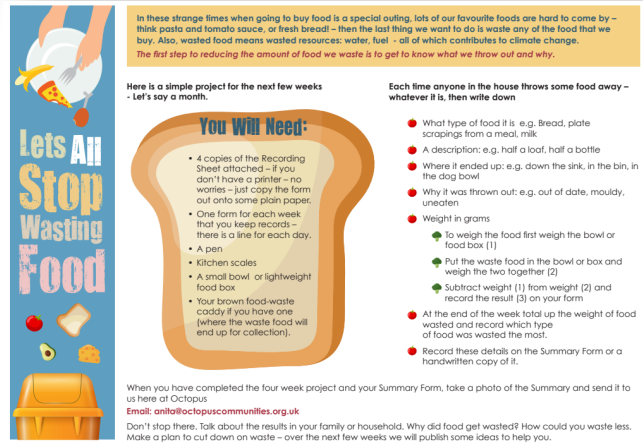
Reduction

Diversion

Redistribution (Community fridges)

Food waste measurement in the Local community (2021-2022)





- 20 diary's across Islington (UK) measured their food for 4 weeks.
- 84% households reported wasted lower than UK Average.
- Identification of new intervention points for local council.

Funded by the Big Lottery Climate Action Fund

Final thoughts

- Citizen Science provides new entry points for co-creation and citizen engagement with the food system.
- Allows a diverse set of voices to engage with the policy process (and generate evidence).
- There is a substantial monetary and time commitment to this process above and beyond “traditional” policy mechanisms – but it is very much worth it.

Please do get in touch

Dr Christian Reynolds

Centre for Food Policy, City, University of London

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- **Nutrition and Food Policy BSc (Hons)**
  Undergraduate degree
- **Food Policy MSc/PGDip/PGCert/MSc Distance Learning**
  Postgraduate taught degree
- **PhD/MPhil Food Policy**
  Postgraduate research degree

https://www.city.ac.uk/prospective-students/courses/postgraduate/food-policy