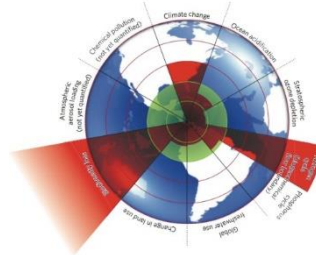
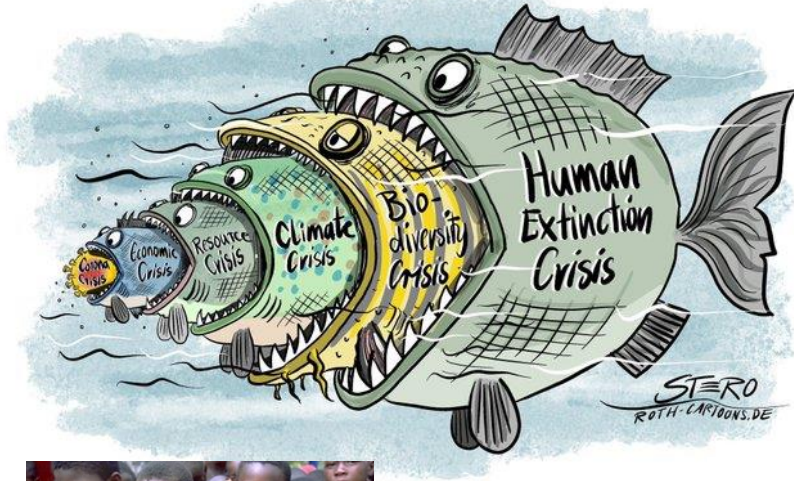


Resourceful with food; contributing to climate neutrality: reduction of food waste and energy saving in the food value chain

Toine Timmermans



Drivers for change



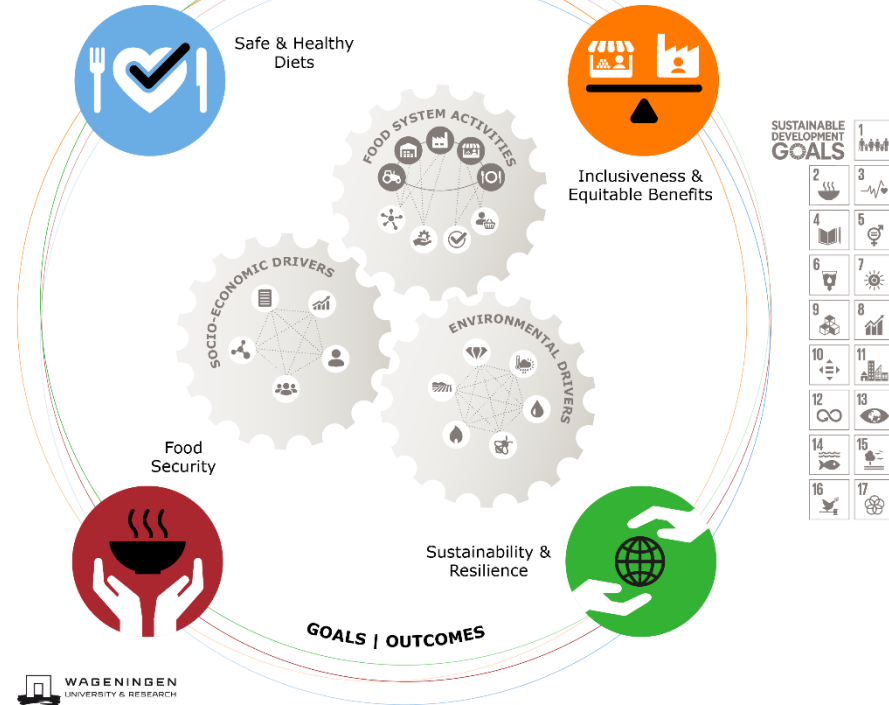
WUR Food Systems Approach

There is no single solution when it comes to tackling food problems. By taking a “Food Systems approach”, Wageningen University & Research is looking at all aspects of the food system, with a focus on 4 “domains”:

1. Food security: sufficient food for everyone
2. Ensuring a healthy diet
3. Fair distribution of costs and revenues
4. Food security: climate change, sustainability and biodiversity

Food systems approach

Von Berkm et al. 2018, Wageningen University & Research



How much of global emissions come from food?

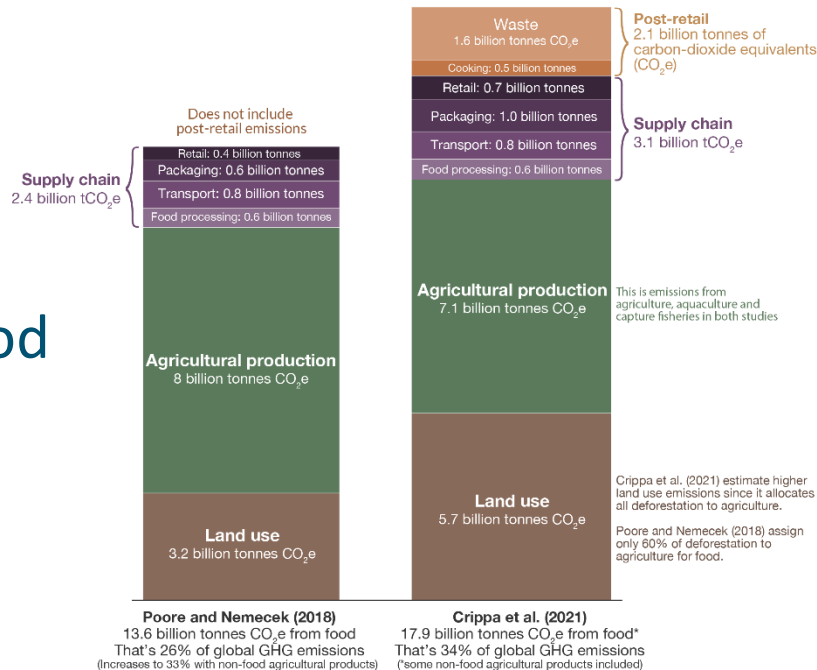
Food systems are responsible for a third of global anthropogenic GHG emissions, if we:

- Include a systems approach (incl. consumer and end-of-life use)
- Include all agricultural biomass (food and non-food application)
- Biggest uncertainty is emissions from deforestation and land use change

How much of global greenhouse gas emissions come from the food system?

Our World in Data

Shown is the comparison of two leading estimates of global greenhouse gas emissions from the food system. Most studies estimate that food and agriculture is responsible for 25% to 35% of global greenhouse gas emissions.



*Crippa et al. (2021) include emissions from a number of non-food agricultural products, including wool, leather, rubber, textiles and some biofuels. Poore and Nemecek (2018) do not include non-food products in their estimate of 13.6 billion tonnes CO₂e. This may explain some of the difference.

Data sources: Joseph Poore & Thomas Nemecek (2018), Reducing food's environmental impacts through producers and consumers. Science.

Crippa, M., et al. (2021) Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*.

OurWorldinData.org - Research and data to make progress against the world's largest problems.

Licensed under CC BY by the author Hannah Ritchie.

Climate change mitigation

REDUCED FOOD WASTE

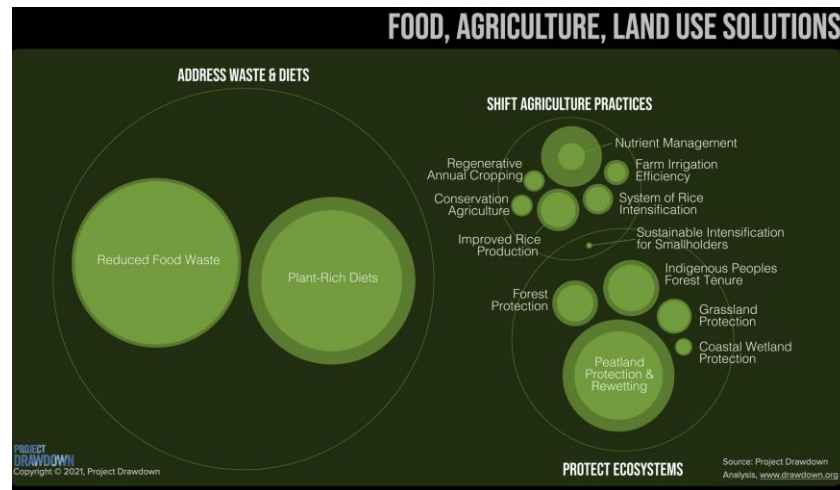
90.7–101.71

GIGATONS

CO₂ EQUIVALENT
REDUCED / SEQUESTERED
(2020–2050)

PROJECT
DRAWDOWN.

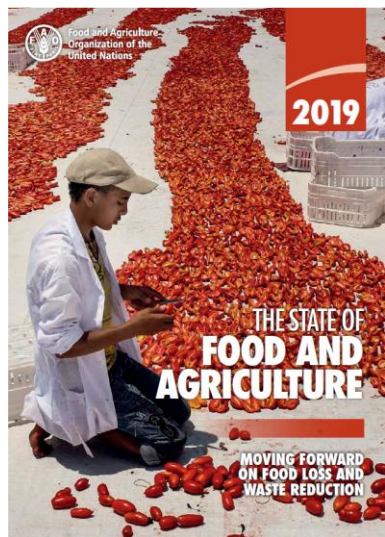
IMPACT: After taking into account the annual adoption of plant-rich diets, if 50–75 percent of food waste is reduced by 2050, avoided emissions could be equal to **13.6–26.0 gigatons** of carbon dioxide. Reducing waste also avoids the deforestation for additional farmland, preventing **77.1–75.1 gigatons** of additional emissions.



Food loss & waste – A hidden challenge



Major References Food Loss and Waste



EXECUTIVE SUMMARY

Highlights

- One-third of all food is lost or wasted between the farm and the fork, and the COVID-19 pandemic is complicating this challenge throughout the food value chain.
- Sustainable Development Goal (SDG) Target 12.3 aims to halve global food waste at the retail and consumer levels and reduce food losses, including post-harvest losses, along supply chains by 2030.
- The United Kingdom is the first country to get more than halfway toward meeting this target, having reduced its national post-farm gate food loss and waste levels by 27 percent from 2007 to 2018—suggesting that achieving the target is possible and even probable.
- Several companies such as Tesco (Central Europe), Campbell, and Arla Foods have achieved food loss and waste reductions of more than 25 percent—suggesting that achieving the target is possible for companies, too.
- With just 10 years to go, the world overall is woefully behind where it needs to be if it is to achieve SDG Target 12.3 by 2030.
- More governments and businesses need to aggressively pursue the Target-Measures-led approach to reduce food waste, set a collective target aligned with SDG 12.3, measure food loss and waste to identify hot spots and to monitor progress, and act boldly to reduce food loss and waste.

Summary

Approximately one-third by weight of all food produced in the world is lost or wasted, resulting in significant impacts on human livelihoods and well-being, the global economy, and the environment. Over the past year, the COVID-19 pandemic has exacerbated the urgency of address-

ABOUT THIS PUBLICATION

SDG Target 12.3 on Food Loss and Waste (2020) Progress Report is the fifth in a series of publications providing an assessment of the world's progress toward achieving Sustainable Development Goal (SDG) Target 12.3. SDG 12 aims to 'by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses'. Prepared on behalf of Champions 12.3, this publication seeks to inform decision makers in government, business, academia, and civil society about recent advances and what remaining steps need to be taken if the world is to achieve the target. The 2020 SDG Progress Report can be found at <https://www.un.org/sdgs>.

AUTHORS

This publication was prepared by Brian Llopis of the World Resources Institute.

The author thanks Champions 12.3 and its members for reviewing and providing helpful input on draft versions of this publication (see acknowledgments).



Food loss & waste – A GLOBAL challenge

Globally, at least 1/3rd of food is lost or wasted between the farm and fork each year:

- [UNEP 2021] estimates 17% of total food available to consumers – or 931 mln Mtons – got wasted in households, retail, hospitality and food services, in 2019
- [FAO 2019] estimates that 14% of all food produced gets lost between harvest and retail
- [WWF 2021] suggests pre-harvest on farm loss is considerable both in developing countries and mature economies

Food Waste in EU-28

EU-28
PRODUCES



88 MILLION
TONNES
of food waste per year

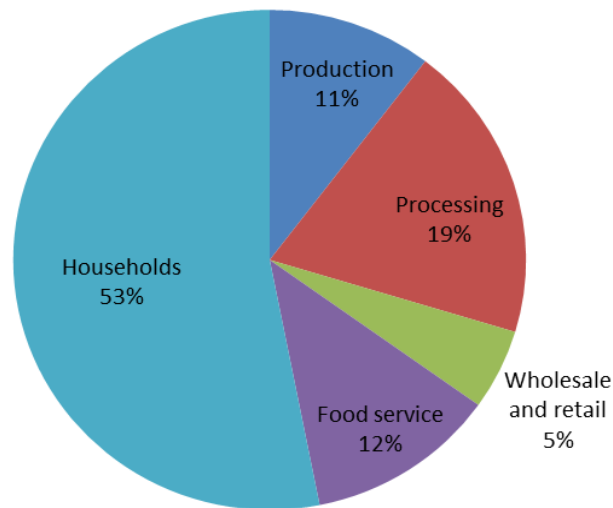
amounting to an estimated

143 BILLION
EUROS



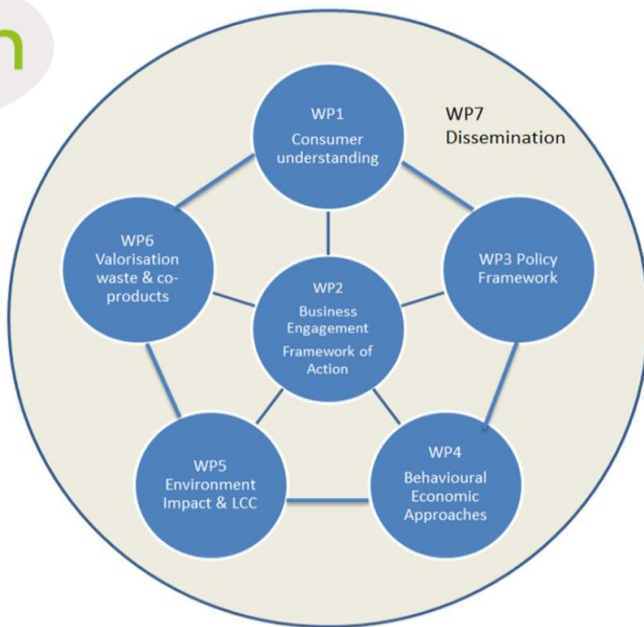
For more information on data and quantification, access the March 2016 FUSIONS reports "Estimates of European Food Waste" & "Food Waste Quantification Manual to monitor Food Waste Amounts and Progression"

- Equivalent of **20%** of all produced food in EU
- **143** billion euros
- ~ **304 Mt CO2 eq** (6% of total emissions of GHG in EU28%)



National Public-Private negotiated agreements

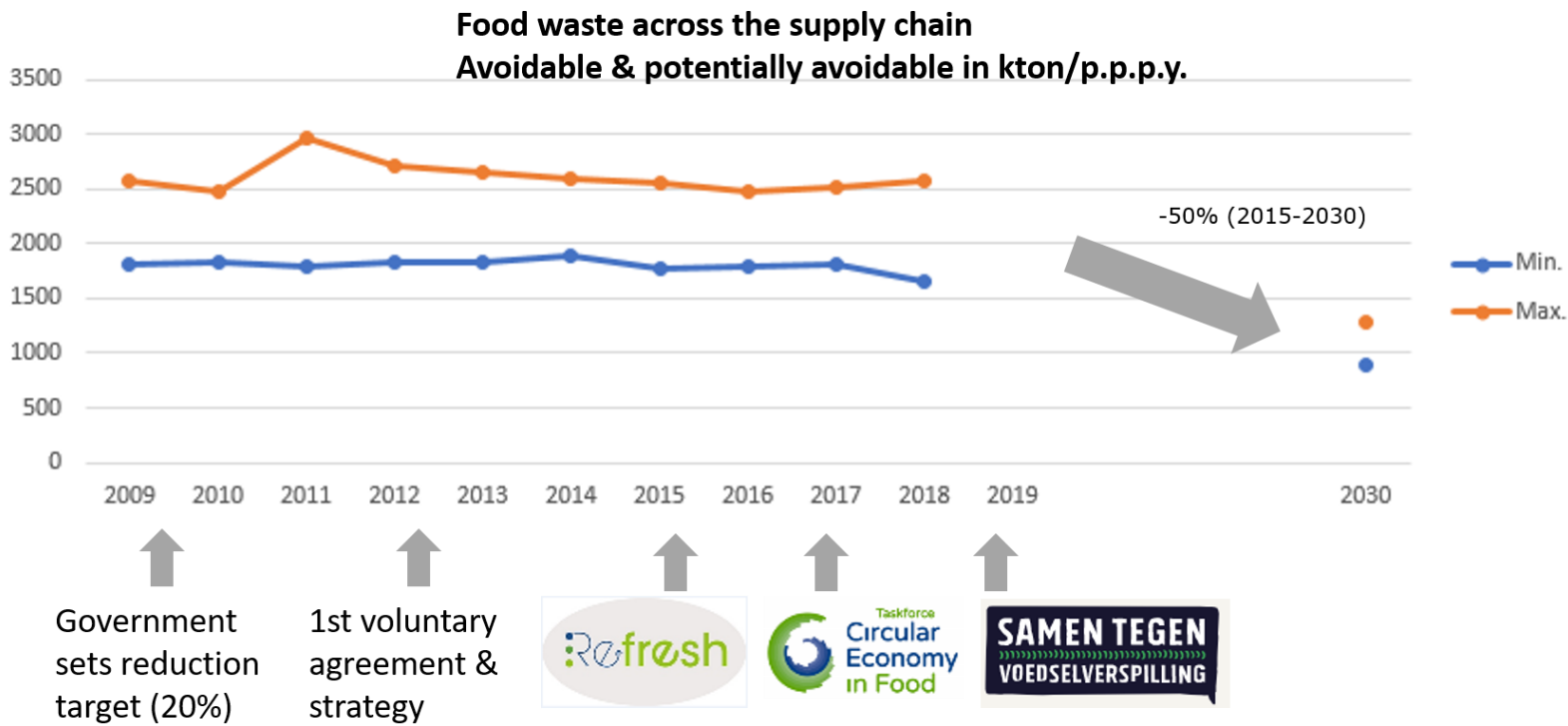
Refresh



Pilot countries



Food Waste in the Netherlands



Public Private coalition in the Netherlands

WHY JOIN FORCES TO COMBAT FOOD WASTE?



1/3

A third of the world's food is lost or wasted every year.¹



Food waste in Europe causes **6%** of all greenhouse gases emitted through human activity.²



Wasting less food = helping to achieve climate goals and ensuring there is enough valuable food for the growing global population.

That is equal to **105-152 KG** per capita annually in the Netherlands.³



OUR OBJECTIVES

In a joint effort, we aim to make the Netherlands one of the first countries to cut food waste in half. We will make the Netherlands a leader and a global role model in terms of realizing Sustainable Development Goal 12.3.

**FOOD WASTE FREE
UNITED**

**2015 - 2030
50%
reduction**

FOUNDING FATHERS

Systemic change Model

Samen Tegen Voedselverspilling: Pillars for action



1. Monitoring progress and impact:

United Against Food Waste measures the effects of its individual and joint approach.



3. Joining forces to combat food waste by consumers:

United Against Food Waste aims to achieve sustainable changes in behaviour through campaigns, interventions and living labs.



2. Joining forces to combat food waste across the food supply chain:

Stakeholders and leaders combine their strengths, network and knowledge to develop innovative solutions.

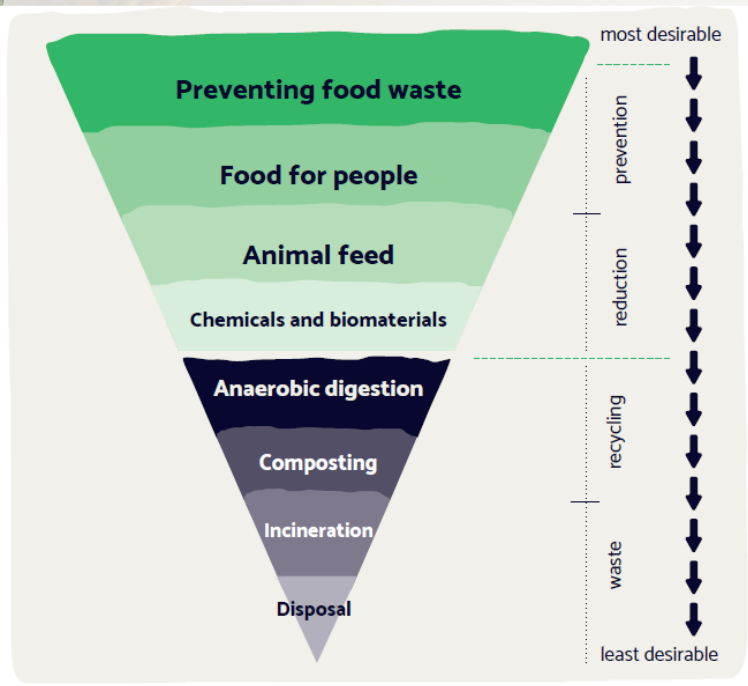


4. Changing the rules:

United Against Food Waste promotes the legislation and instruments needed to create a circular economy.

FOOD WASTE FREE
UNITED

Principle: Total use of biomass



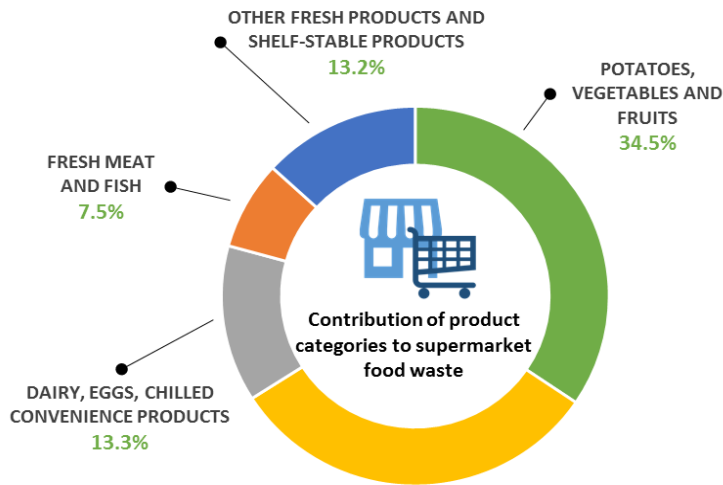
*1 million
tonnes less
food waste in
2030 !*



Food Retail benchmark

Dutch supermarkets provide insights into food waste

On average, 98.3% of the food offered in supermarkets in The Netherlands is sold. The remaining 1.7% of food (in kilograms) does not reach the consumer.



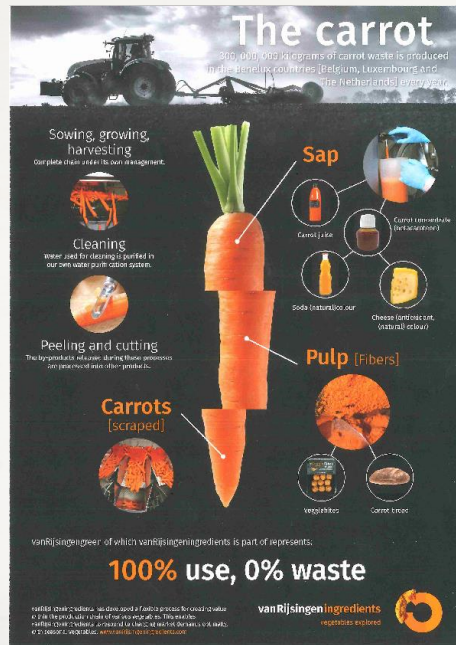
1. Monitoring progress and impact:

Food Waste Free United measures the effects of its individual and joint approach.

Research supermarkets, het Centraal Bureau Levensmiddelenhandel (CBL), Wageningen Universiteit & Research (WUR) the ministry van Landbouw, Natuur & Voedselkwaliteit onder coordination of stichting Samen Tegen Voedselverspilling (STV).

Examples

vanRijsingen**ingredients**
vegetables explored



2. Joining forces to combat food waste across the food supply chain:
Stakeholders and leaders combine their strengths, network and knowledge to develop innovative solutions.



Fresh frozen bread aisle

JUMBO
Verberne

AMARANT BAKKERS

MVO
NEDERLAND

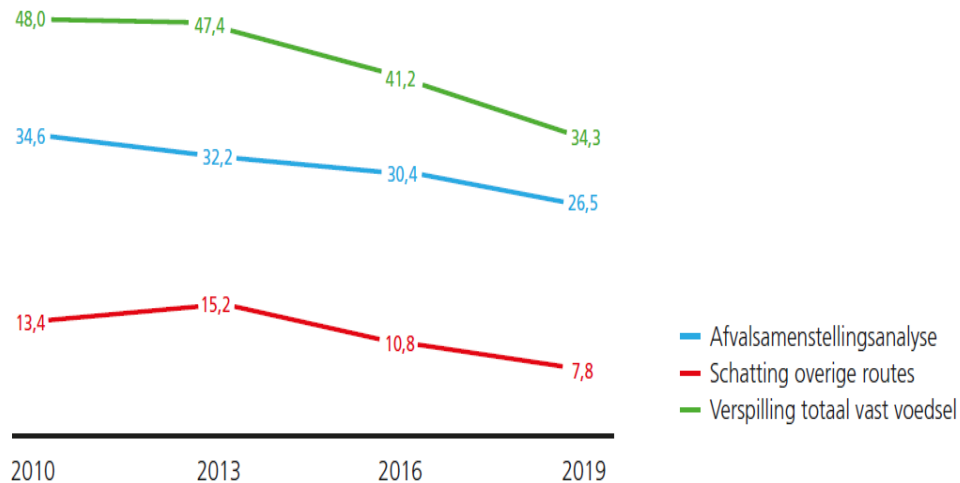
FOOD WASTE FREE



UNITED

Consumer food waste reduction

Dutch are on the front food in the fight against food waste. In 2019 the rate of food waste per person was 34.3 kg: nearly 7 kg less than in 2016.



Source: Voedingscentrum, Syntheserapport Voedselverspilling bij huishoudens in Nederland in 2019

Social marketing approach

Motivation



Ability



Opportunity



Household practices

Household food waste

<https://eu-refresh.org/causes-determinants-consumers-food-waste>

New project FETE: <https://www.wur.nl/en/show/Food-Waste-Transition-from-Excess-to-Enough.htm>



KALENDER

Di. 7 september

Brood



Wo. 8 september

Zuivel



Do. 9 september

Groente



Vr. 10 september

Fruit



Za. 11 september

Aardappels



Zo. 12 september

Vlees



Ma. 13 september

Restjes van de week



3. Joining forces to combat food waste bv consumers:

Food Waste Free United aims to achieve sustainable changes in behaviour through campaigns, interventions and living labs.



Food for thought, 98 months before 2030

- Only 11 countries mention food loss and waste reduction in their Nationally Determined Contributions to the Paris Agreement.
- EU has ambitious Green Deal targets, like reduction of GHG emissions with 55%, and reduction of food waste with 50% in 2030. The implementation plan Farm2Fork seems not fit for purpose.
- At the UN-FSS a solution cluster “Food is never waste” has been launched; A global initiative to halve food loss and waste by 2030

Food for thought, 98 months before 2030

What can science and your University contribute ?

- Invest in a systemic approach – food systems & impact focus
- Lack of sufficient data: invest in FAIR data: Findable, Accessible, Interoperability and Reuse of digital assets
- Invest in bridging the gap -> Science for impact, more interaction with society, changing the rules, removing barriers

How can your University play a much bigger role in interacting with the EU > national governments > local level to change practice ?

Thanks for your attention

