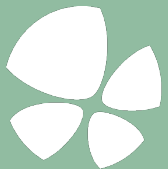# The ZeroW project and other food loss and waste initiatives

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Business development Manager, FBCD
Dissemination manager in the ZeroW project

"Working together towards future proof food systems"
Roeselare, June 2nd, 2022

Food & Bio Cluster Denmark

Danmarks Erhvervsfremmebestyrelse

ZERO

Funded by the European Union

About Food & Bio Cluster Denmark

- Denmark's national cluster for the food & bio industries

We cover the entire value chain from farm to fork
- and beyond

Bioresources

Handling, conversion and refining

Bio-based raw materials

Production

Food & Ingredients

Waste and upcycling

Food & Bio based products

Food & Bio Cluster
Denmark

Food & Bio Cluster
Denmark

Food & Bio Cluster Denmark in numbers

+6500 Contacts

+2500 organisations

Partners in **65** countries

Brains **+40**

10 Locations in Danmark

+360 Members

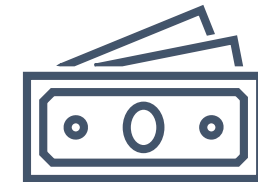**+150** events a year

+5300 followers on LinkedIn

3 Copenhagen Aarhus Viborg Incubators

+150 M € project portfolio

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Food loss & waste activities…

The ReFood Certification scheme

The REFOOD label is a scheme for companies and organizations in the food and service sector, who make an effort to reduce food waste and support recycling. Membership is free and requires that you choose at least three food waste reduction initiatives from our many good proposals, as well as have a scheme for recycling food waste.

The amount of organic waste from processing industry/retail/HORECA segment in DK is 699,000 tonnes per year. Of this amount 523,000 tonnes is food waste of which a lot could and should be avoided!

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Food loss & waste activities

Side Streams from Food Processing Network

This network aims to explore challenges and possibilities within side streams from food processing to reduce waste. It focuses on strategy, implementation and commercialization.

Join the Side Streams from Food Processing Network if you want to get inspiration, find new partners, share and gain knowledge and be part of finding new innovative solutions.

This network is in English.

Food & Bio Cluster Members only

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Help our food loss & waste members

EXAMPLE

FooDOP

Plan menus

- Plan menus in a with a structured overview
- Get system supported input about quantities, sustainability and nutrition
- Get inspiration from menu databases with performance data

Serve menus

- Serve menus with IoT weights under all trays and organic waste bins
- Measure food waste from both production and serving on individual dish level
- Share menu information via digital signs and channels

Have insight and improve

- See how menus do in dynamic dashboards
- Set user defined targets for e.g. food waste and user satisfaction
- Have recommendations for menu planning

Provided product development funding through the programme "Future Food & Bio Resources".

https://foodop.dk/en/less-food-waste/

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How we finance our work
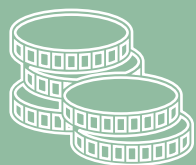
Projects with public funding from Denmark

Projects funded by private foundations

Projects with EU-funding

Incubator management

Consultancy assignments

Member fees

Food & Bio Cluster
Denmark

How we finance our work

Projects with EU-funding

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The ZeroW project

- About 20% of the food produced in the EU goes to waste!

- 36.2 million people in the EU cannot afford a quality meal every second day (Eurostat, 2020).

- ZeroW directly addresses the challenge of food loss and waste (FLW) by developing and testing a synergetic mix of innovations in real life conditions with the aim to deliver ambitious reductions at all stages of the food value chain from post-harvest to consumption.

Funded by the European Union

Facts about ZeroW

Type of action: IA

Project period: 1 January 2022 – 31 December 2025

Total budget: € 12 932 881,25

Project consortium: 46 partners from 17 countries

Funded under Horizon 2020 - Call: H2020-LC-GD-2020 (Building a low-carbon, climate resilient future: Research and innovation in support of the European Green Deal)

SOCIETAL CHALLENGES - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy

Grant agreement no. 101036388

ZEROW

Funded by
the European Union

This project is funded by the European Union
under Grant Agreement no. 101036388

46 partners – 17 countries

Coordinated by
INLECOM COMMERCIAL PATHWAYS

Project goal

ZeroW will provide credible solutions for significantly reducing FLW, involving all actors in the food system in a collaborative framework, to accelerate the just transition to a social, economic and environmentally sustainable food system for all.
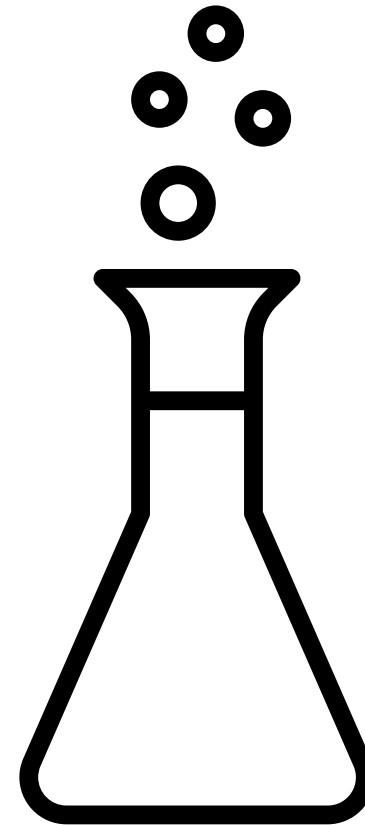
ZEROW

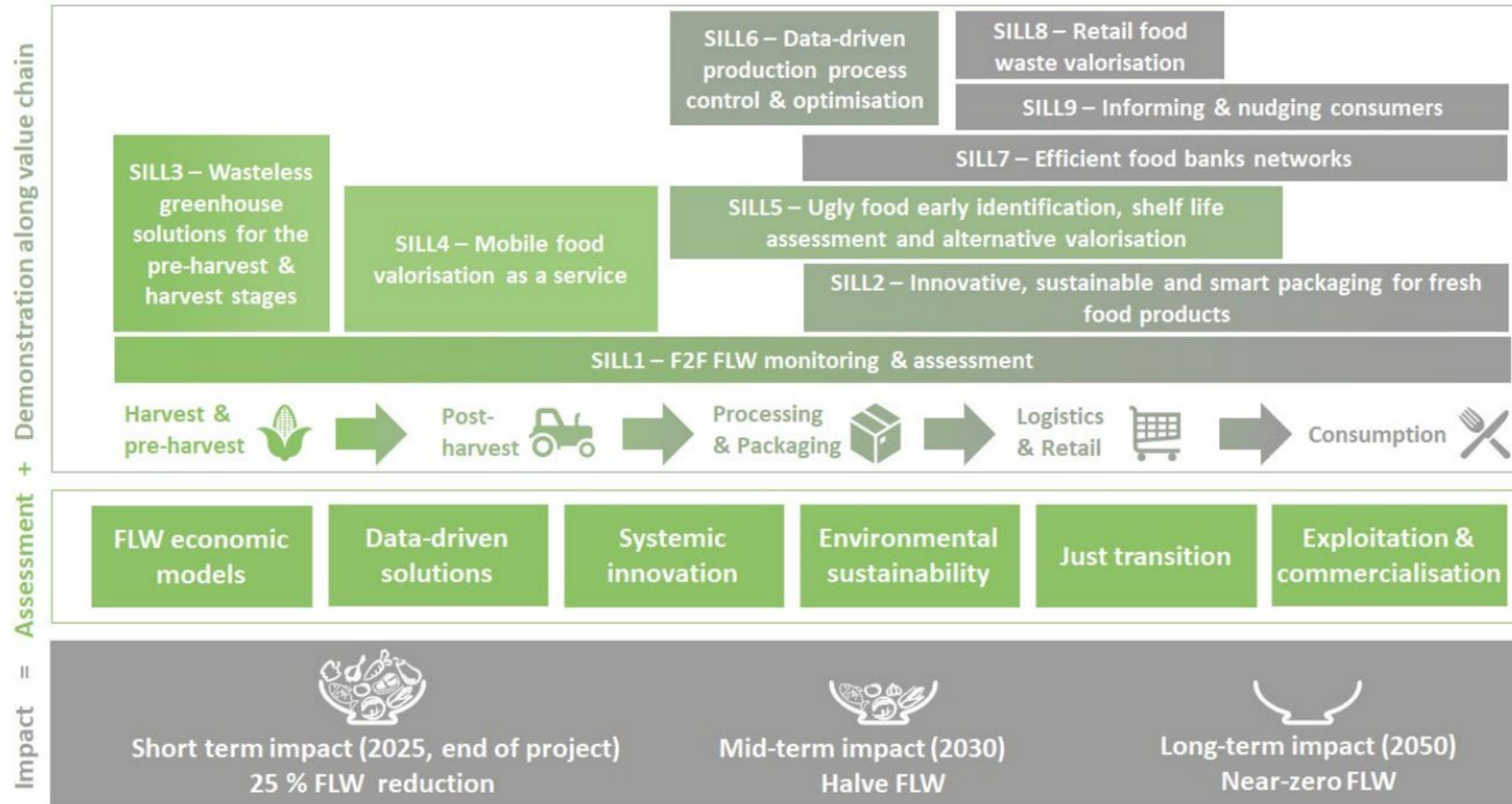**Funded by
the European Union**

Systemic Innovation Living Labs

Systemic Innovation Living Labs (SILLs)

- ZeroW has built up 9 real-life Living Labs.

- Activities take place in several different countries.

- Span across the whole value chain.

- SILL activities led by BioSense Institute, Serbia.

ZeroW Living Lab overview

Living Lab #1: FLW monitoring and assessment

EXAMPLE

- Open, data-driven platform for capturing and assessing FLW data throughout the supply chain.

- Systemic approach to collecting data.

- Better insight into where the problems arise and allow interventions at critical stages of the value chain.
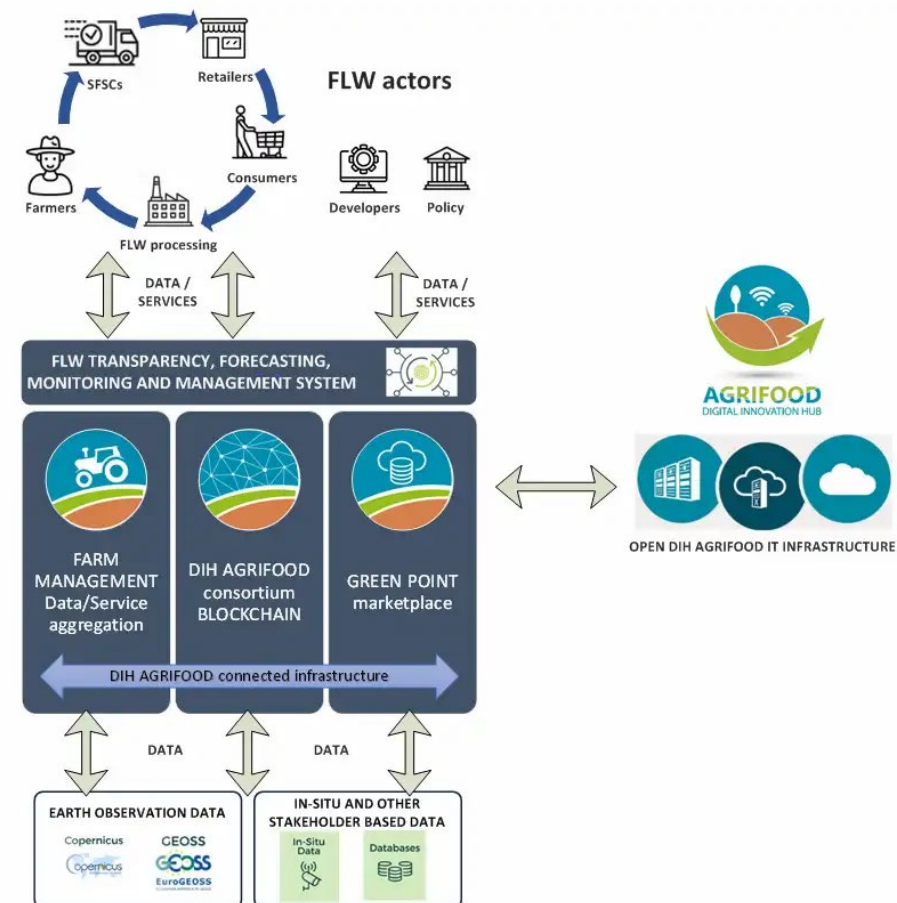
Living Lab #2: Innovative sustainable and smart packaging

- 10% of the 88 million tonnes of food waste generated in the EU annually is due to date labelling, misunderstanding or misinterpretation.

- Compostable packaging solution for oily fish to extend the shelf-life of packaged products and facilitate stock management with an integrated freshness label.

ZERO W

Living Lab #3: Wasteless greenhouse solutions

- Every year a large amount of greenhouse-grown food is wasted throughout the world because of non-optimized yield planning, logistics, etc.

- Computer vision will "predict the future" in greenhouses before harvesting.

- Development of precise tomato yield monitoring to reduce food loss.

Living Lab #8: FLW valouration through algae production

- According to the UN over 10% of the global food waste is generated in retail (Food Waste Index Report, 2021).

- An in-store pre-treatment process will turn ordinary retail waste into high value micro-algae feed.

- Our process will transform it into a dehydrated "powder" that can be used for microalgae feed.

ZERO W

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Living Lab end products/services

	Systemic innovation living lab	End product/service
1	F2F FLW monitoring & assessment	Open, data-driven IT platform for FLW monitoring & assessment.
2	Innovative sustainable and smart packaging for fresh food products	Barrier and compostable packaging suitable for food contact; (b) Functional packaging based on a compartmentalised compostable tray retaining exudates liquids from fish and increasing quality; (c) App and freshness indicators for extending packaged fish shelf life and improving stock management at retail level.
3	Wasteless greenhouse solutions for (pre)harvesting aligned with short-term downstream demand	(a) Technology for greenhouse fruit & vegetable growth monitoring, ripeness assessment and yield forecasting (initially focused on tomatoes), based on novel 'deep vision' and data science techniques; (b) Technical solution for automated produce quality evaluation according to 'cosmetic standards' at the pre-harvest and harvest stages; (c) Software service for optimal harvest scheduling, yield planning and data integration throughout the food supply chain.
4	Mobile food valorisation as a service	(a) Mobile processing unit as a service; (b) Healthy, tasteful products derived from saved food and vegetable waste biomass; (c) Deteriorating food auctioning service.
5	Ugly food early identification, shelf-life assessment & alternative valorisation	(a) Multi-sensor platform with capacity of analysing and processing around 300,000 fruit/hour and with the possibility of classification in three different outputs based on quality and shelf-life parameters; (b) Data service platform to control input produce.
6	Food waste reduction through advanced data-driven production process control & optimisation	Control and optimisation software platform for food production lines, to be offered through a Service Level Agreement or as a SaaS model.
7	Food waste reduction through efficient food bank networks	(a) Demand prediction tool for European regions and food banks to assess the expected number of food bank customers; (b) supply prediction tool for food banks; (c) handbook of all possible food waste reduction strategies that foodbanks can adopt; (d) decision support tool for waste reduction initiatives at food banks; (e) donation tool for donors to advise on products that are ready for donation.
8	Retail food waste valorisation through algae production for high-value applications	(a) In-store/in-warehouse food waste pre-treatment process; (b) new hermetic container for FLW pre-treated transportation in reverse logistics; FLW logistics optimisation.
9	'Fork to Farm to Fork' (3F): Informing and nudging consumers to make better choices through reverse (dietetics) and forward (FLW, sustainability, affordability) optimization	(a) a label for meals, recipes & meal packages to inform the consumer about the meal's nutritional value as well as its impact on FLW and other environmental factors, and information on how to buy and store food responsibly to prevent FLW; (b) an app to allow consumers to obtain these scores for their own recipes or even for complete diets; (c) new recipes, fresh meal packages & semi-prepared packets of ingredients, such as pre-cut vegetables developed to have a low impact on FLW, low environmental impact and high nutri-score.

Modelling FLW economics from F2F

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Modelling FLW economics from F2F

- To outline a conceptual framework for measuring the economic effects of FWL along the food chain.

- To develop a high-level economic model encompassing the food supply chain actors and validate it by the SILLs.

- To quantitatively assess various FLW interventions by running simulations with the FLW model.

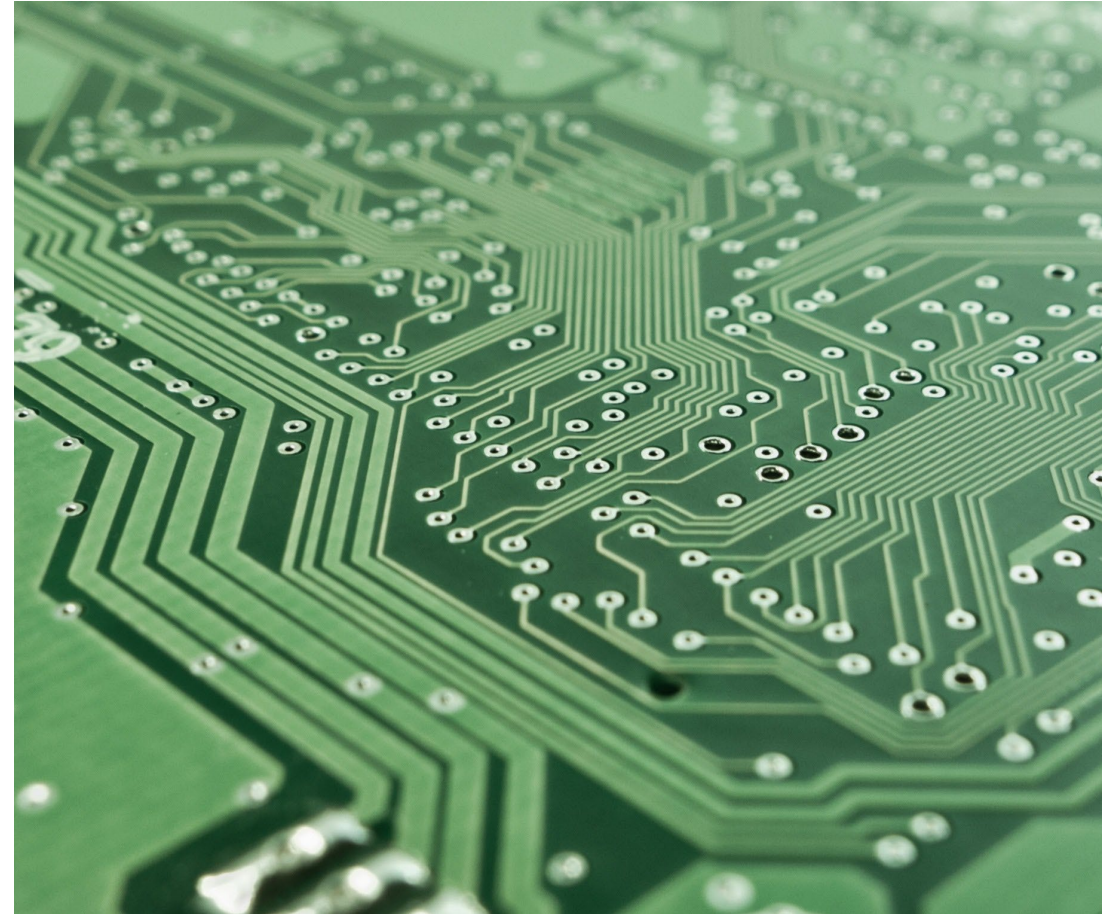ZERO⌄

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0FLW Data Space and F2F smart applications

Data-driven near-zero 0FLW Data Space

- ZeroW addresses the need to move from today's fragmented solutions targeted on isolated FLW problems to synergised solutions based on shared data, knowledge, and collective intelligence - breaking siloed solutions and 'opening' closed ecosystems.

- By developing intelligent Generic AI modules, ZeroW will enhance intelligence to data and discover trends, best practices and new collaborative business models to sustain the impact of innovation.
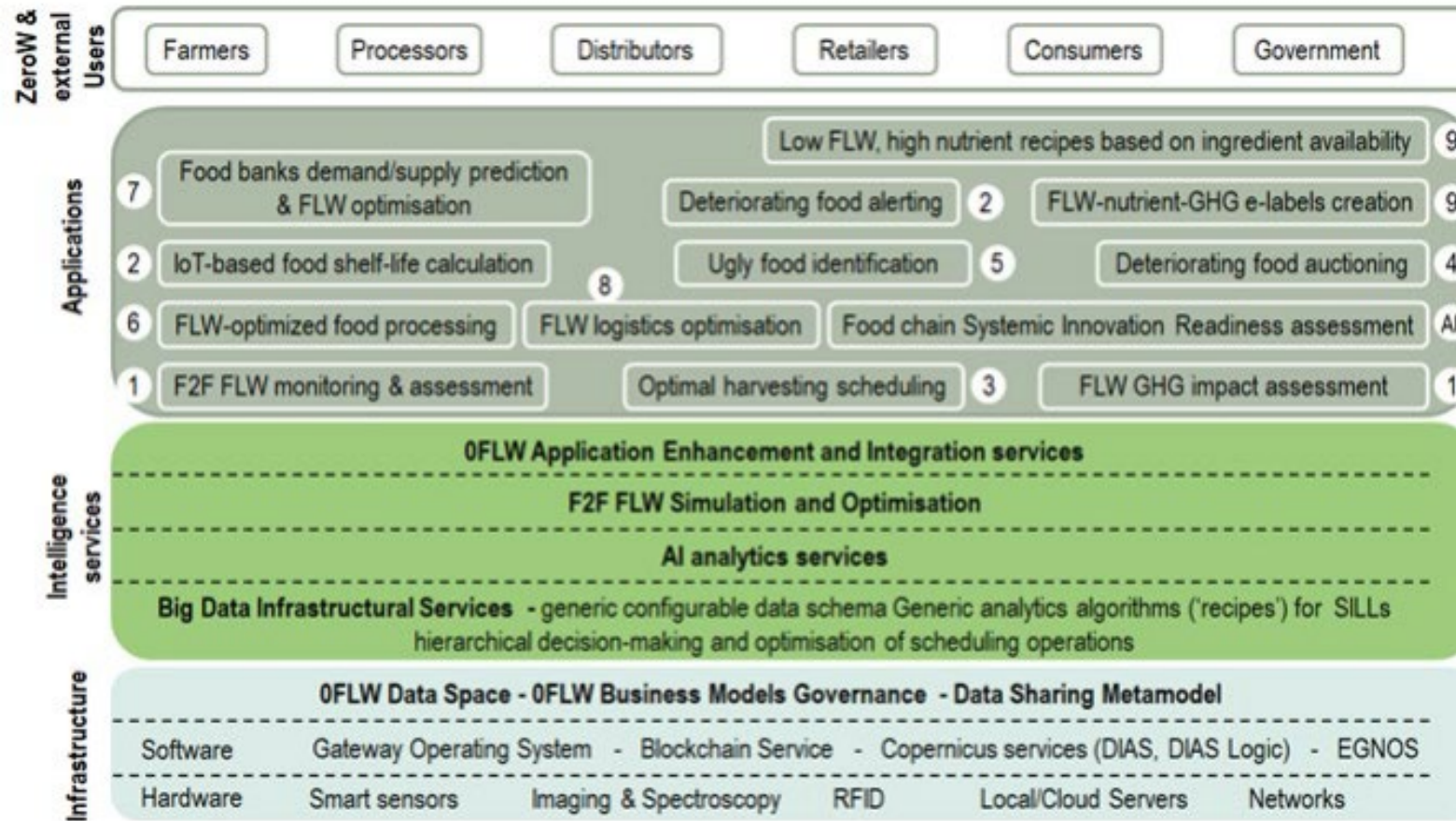
Data-driven near-zero FLW Smart Applications

- We will provide a suite of data-driven Intelligence Services consisting of 4 key components:
    - Big Data Infrastructural Services
    - SILL Actors Incentives Assessment and Optimization Services
    - AI Analytics and Visualization Services supporting key aspects of FLW management.
    - 0FLW Application Enhancement and Integration Services in support of the SILLs solutions.

- We want 0FLW applications to take effect and scale as quick as possible. That requires data sharing, within and across applications. We aim to support that in an effective and "future-proof" way, with technology and organization in our data space.

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Impact
.
.
Applications
.
.
Analytics

Facilitate Data Sharing for 0FLW
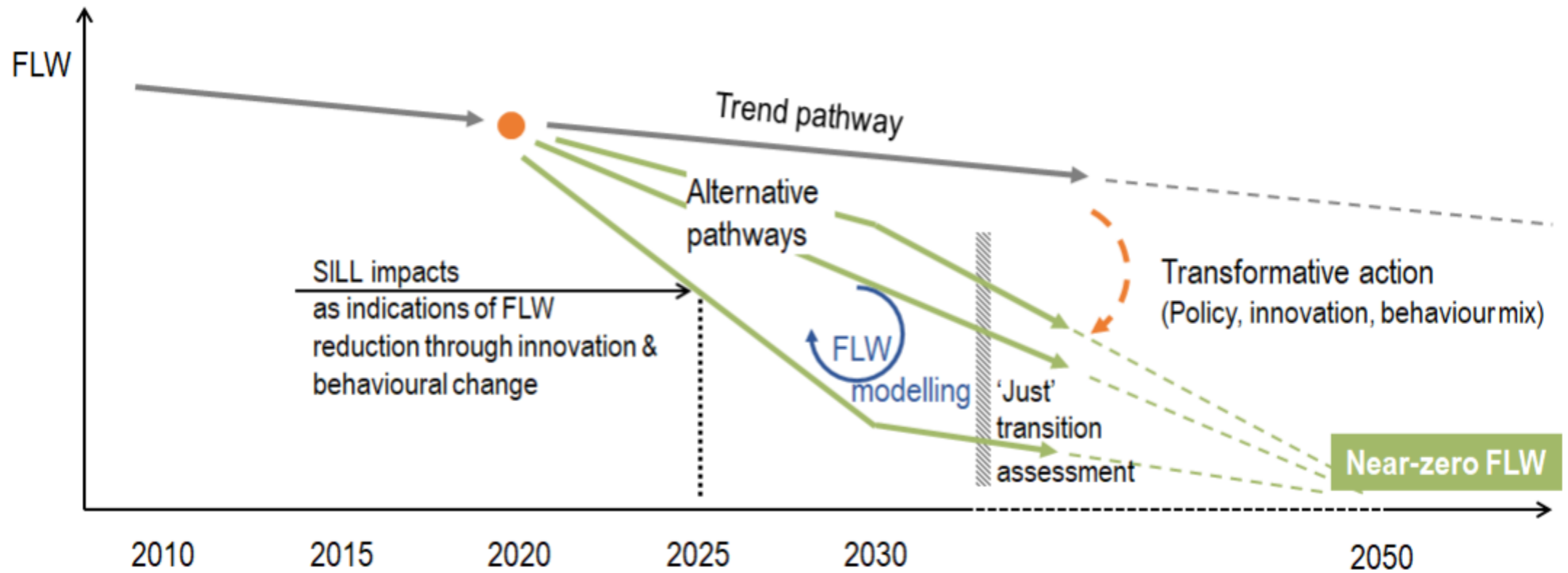
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Architecture of open-source ZeroW platform

A 'just' near-zero FLW transition pathway

Building a just transition pathway

More information

www.zerow-project.eu

https://www.linkedin.com/company/zerow-project

Other recent EU-funded waste reduction or valorisation projects

Our advice for innovation and collaboration via EU projects

• Secure support of your management

• Realistic time-plan

• Allocate resources

• Prepare as much as you can

• Network, network, network (you're here – well done)

• Make sure you deliver in the projects you get – that improves your chance of getting the next project!

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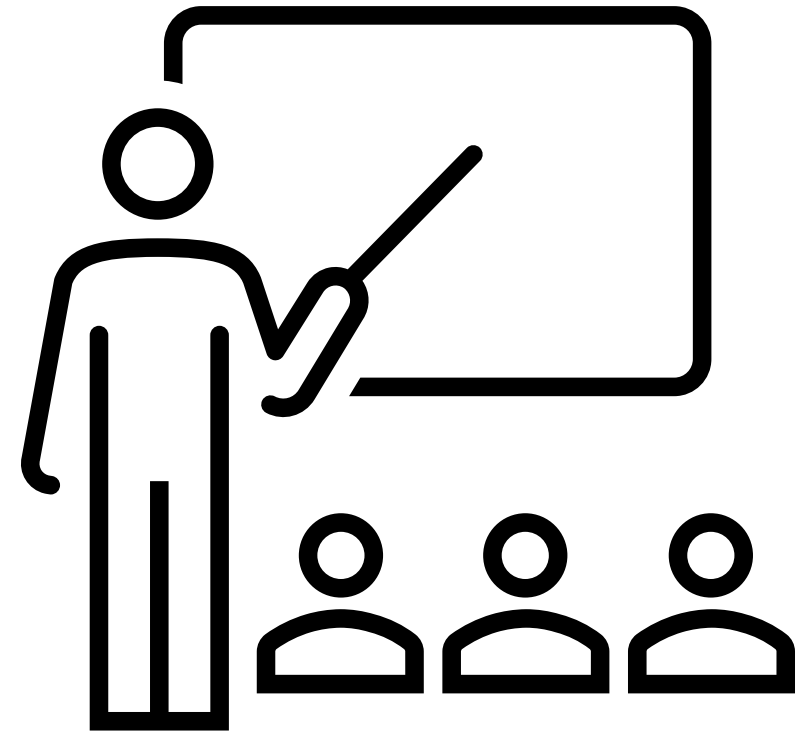
Thank you for your attention!

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dissemination manager in the ZeroW project

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