Which factors impact households' selective biowaste sorting? An agenda for future behaviour change campaigns in Athens.

Laura Temmerman

imec

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 818308.

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VALUE CHAINS FOR DISRUPTIVE TRANSFORMATION OF URBAN BIOWASTE INTO BIOBASED PRODUCTS IN THE CITY CONTEXT

Agenda

1) Food production, the bioeconomy and the role of the different stakeholders

2) Behaviour change and the theory of planned behaviour

3) Methodology & results
   - Expert interviews
   - Online survey
   - Focus groups

4) Conclusions

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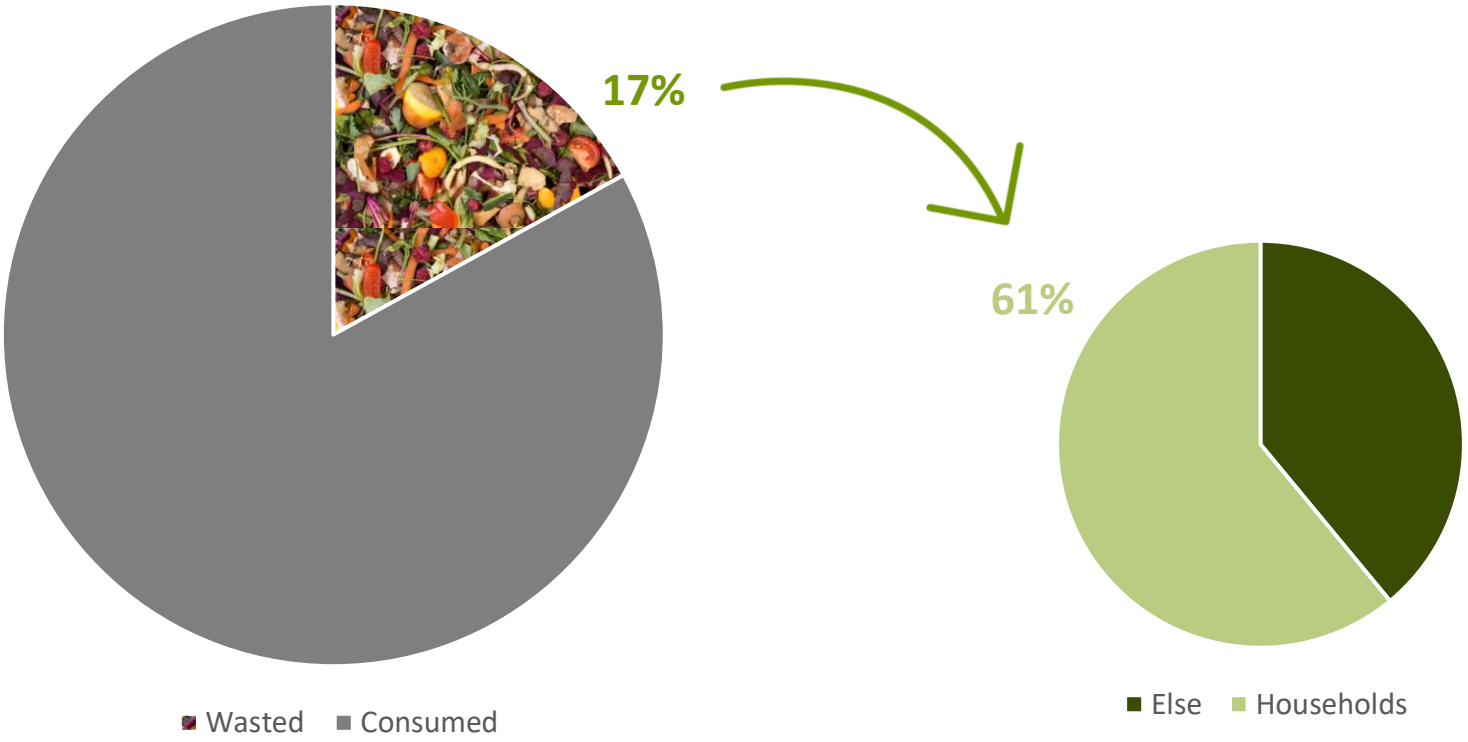
Food production & waste in the EU



UNEP (2021)

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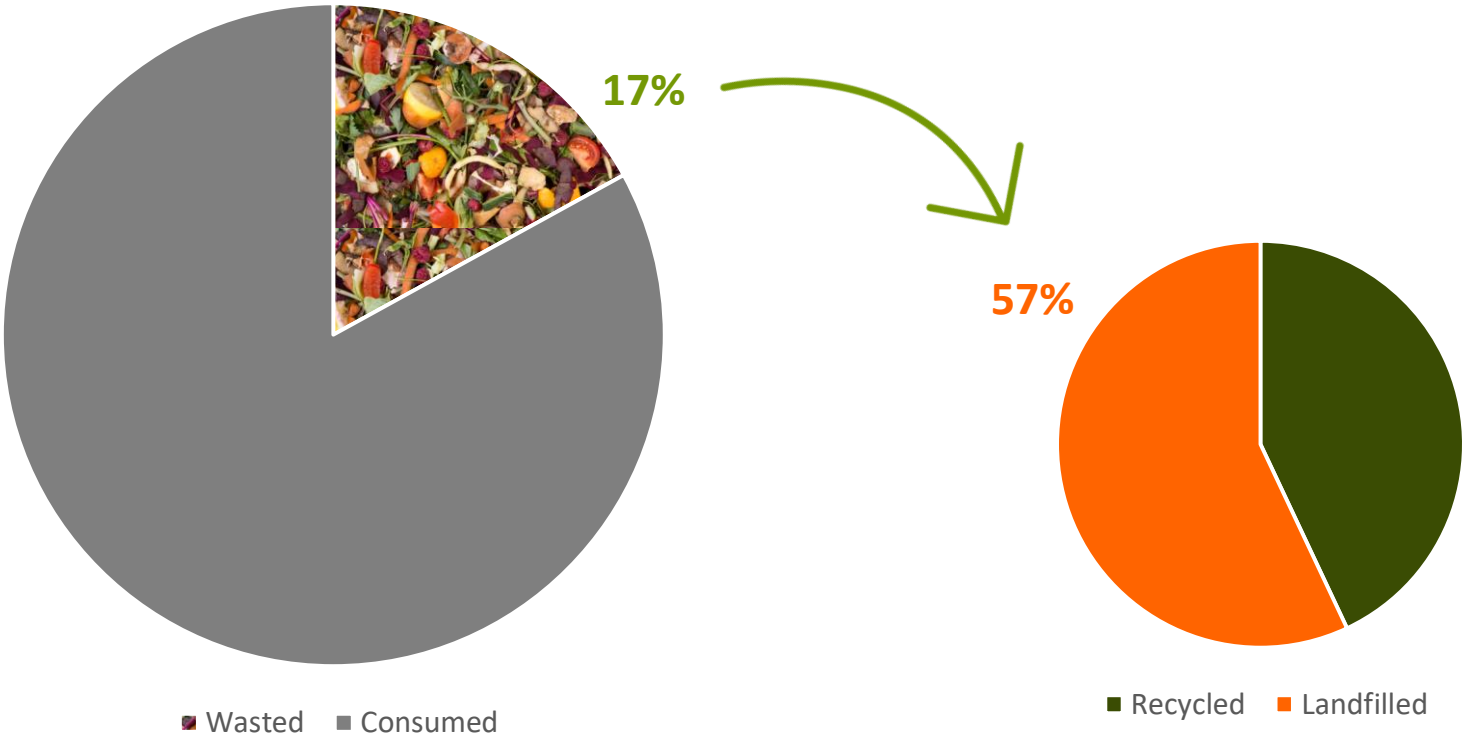

EEA (2020)

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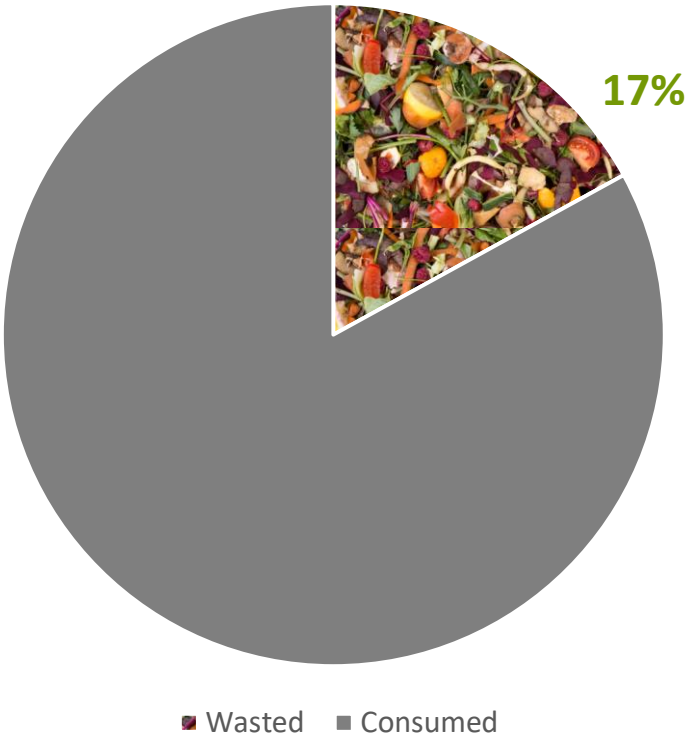

17%

Air pollution
Soil pollution
Economic and environmental losses

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The bioeconomy

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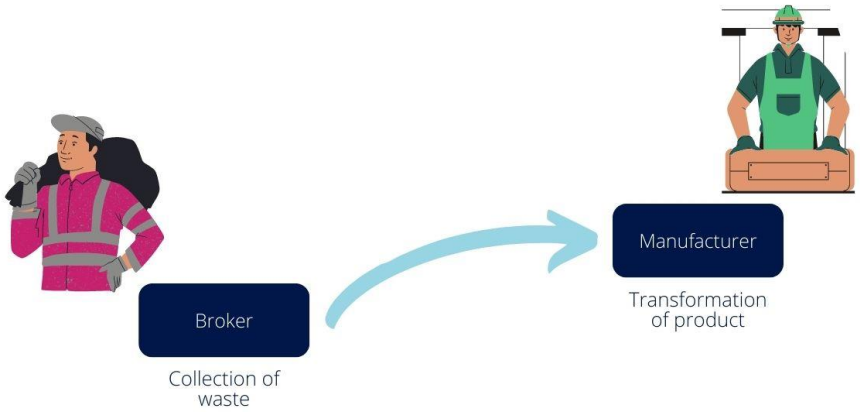
The bioeconomy



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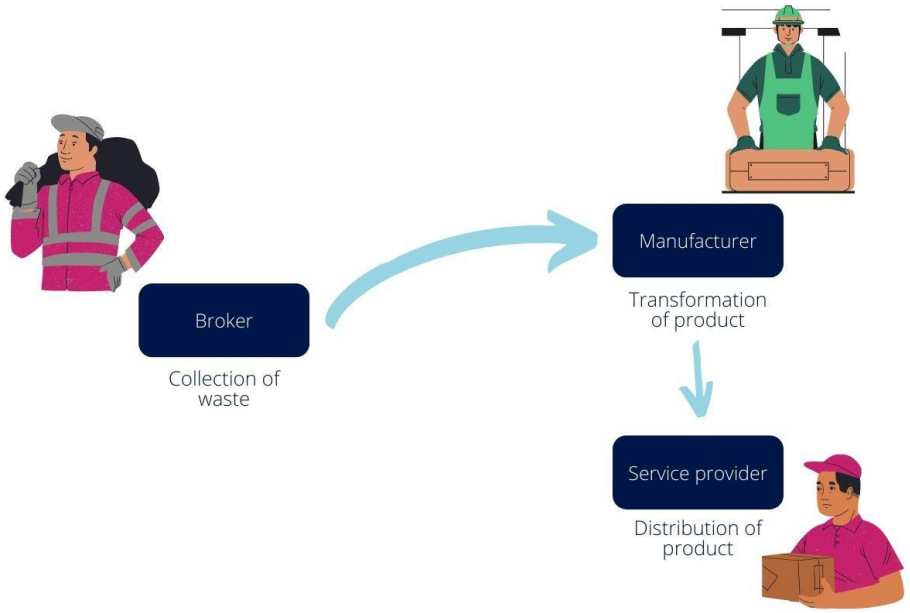

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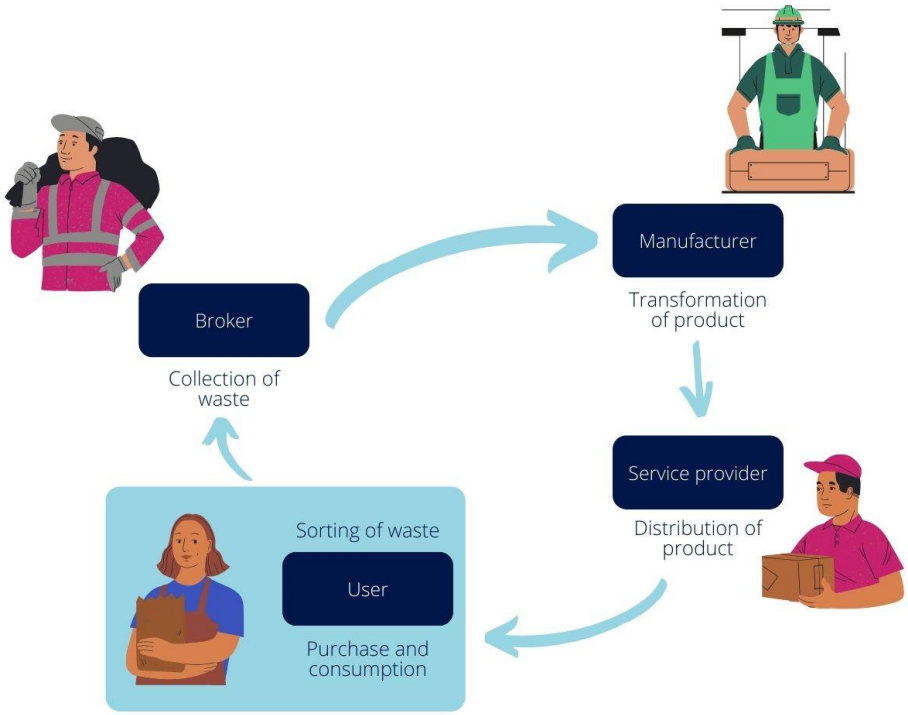

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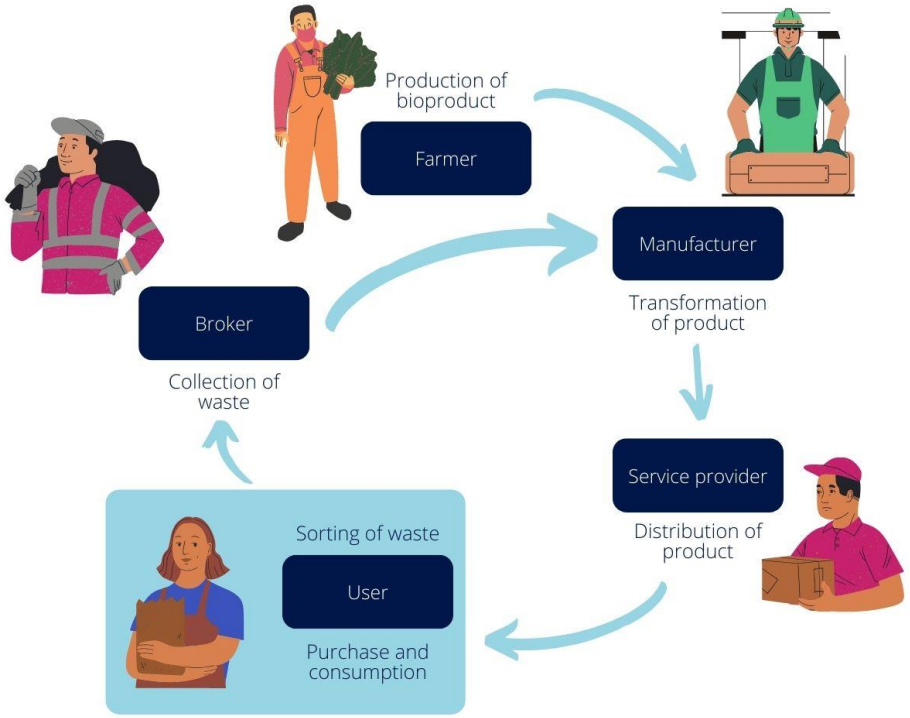

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Change is needed

Behaviour change is required …

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Change is needed

… But how?

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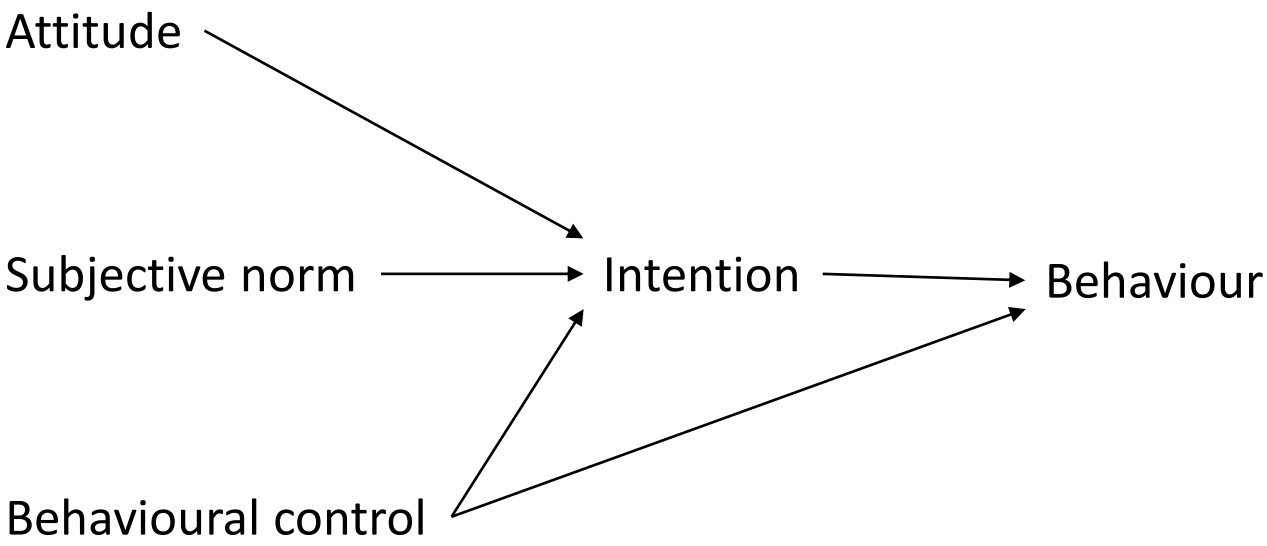
Theory of planned behaviour (Azjen, 1991)



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Additional variables

- Environmental concern
- Moral and descriptive norms
- Awareness of consequences
- Knowledge
- Convenience
- Trust

- Socio-demographics

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Methodology

- Vari-Voula-Vouliagmeni Municipality (East Attica, Greece)
- Mixed method research design
  - Online survey
  - Focus groups
  - Expert interviews

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Expert interviews

- Network of biowaste bins covers approx. 30% of the municipality
- Possible elements impacting behaviour:
  - insufficient knowledge about (bio)waste management practices
  - difficulties experienced in sorting biowaste
  - absence of a single system providing information about and promoting the recycling of organic materials
  - missing behaviour change methodologies and designs tailored to the needs of the local population
  - difficulties faced by local municipalities in ensuring procurement for biowaste separation equipment, such as bins.

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Online survey

- N= 153
- Normality of the outcome, independence of the observations, multicollinearity of the independent variables → OK

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Online survey

Concept	Cronbach's alpha	$\bar{x}$	SD
Selective biowaste sorting behaviour	-	3.01	2.29
Awareness of consequences	.769	4.17	1.02
Self-efficacy	.887	4.16	1.01
Attitude	.844	4.13	0.75
Moral norm	-	4.07	0.78
Subjective norm	.882	3.70	1.12
Trust	.891	3.07	1.30
Knowledge	-	2.72	1.04
Convenience	.639	2.45	0.81
Controllability	.845	2.37	1.26
Descriptive norm	.812	1.95	0.95

Variables were measured on a 5-point Likert scale, except for 'selective biowaste sorting behaviour' which was measured on a 7-point Likert scale.

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Online survey

Variables	$\bar{x}$	SD	Step 1 β	Step 2 β
Perceived controllability	2.37	1.26	.432***	.349***
Attitude	4.13	0.75	.147*	.122·
Descriptive norm	1.95	0.95		.177*

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, ·$p < 0.1$
Variables measured on a 5-point Likert scale.

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Focus groups

+

- environmental protection (clean environment, beneficial for the environment, environmental awareness, no rubbish in nature, zero waste, cleanliness)
- moral gratification (conscientiousness, responsibility, sense of helping)
- well-being, a better future and education.

−

- Lack of convenience (lack of bins, bags, the fact that it is time consuming
- Lack of practical knowledge as to how to sort and what to sort,
- “Dirty” factor: insects, odours, and liquids

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Focus group

- New insight:
  - Division of the behaviour into two actions
    - Sorting at home
    - Bringing the bag to the bin
  - Real demand regarding infromation

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Conclusion

- Important role of
  - Perceived controllability vs self-efficacy
    - Esp. drop-off collection scheme
    - Support theoretical separation of the original concept of PBC
  - Descriptive norm
    - Future research: on both actions?

→ Persuasive communication (social media)
→ Behavioural modelling (online & offline community of practice)
→ Provision of knowledge (online & offline sorting game)

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Thank you!

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