Lappeenranta University of Technology, LUT School of Energy Systems

Updating and testing of a Finnish method for mixed MSW composition studies

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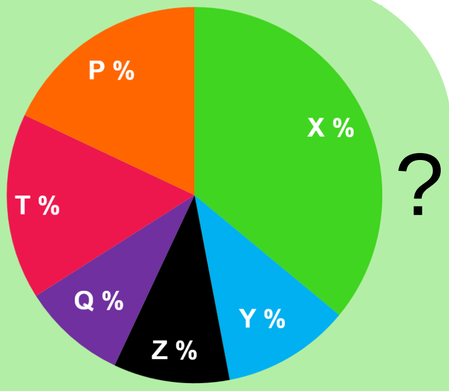
Background

- Finnish mixed MSW composition studies have been previously carried out in various methods
- A method for mixed MSW composition studies was published in order to improve the national comparability of composition study results



Research questions

- What are the Finnish information needs concerning mixed MSW?
- How the method works in practice and what is the composition of mixed MSW in two case areas, in Riihimäki and in Turku?
- How the method should be updated so that it corresponds to the information needs about mixed MSW and also works in practice?

Methods

- Survey
- Composition studies in two case areas

Updating of the method

Level 1	Level 2	Level 3
1. Biowaste	1.1 Kitchen waste	**1.1.1 Avoidable food waste***
	1.2 Garden waste	**1.1.2 Unavoidable food waste***
	1.3 Other biowaste	1.2.1 Sticks and branches
		1.2.2 Other garden waste
2. Paper	2.1 Paper packaging	2.2.1 Producer responsibility paper
	2.2 Non-packaging paper	**2.2.2 Other recyclable non-packaging paper***
		2.2.3 Other non-packaging paper*
3. Paperboard and cardboard	3.1 Paperboard packaging	3.1.1 Aluminium-layered paperboard packaging
	3.2 Cardboard packaging	3.1.2 Other paperboard packaging
	3.3 Non-packaging paperboard and cardboard	**3.3.1 Other recyclable non-packaging paperboard and cardboard***
		3.3.1 Other non-packaging paperboard and cardboard*
4. Wood	4.1 Wood packaging	4.3.1 Construction and demolition wood
	4.2 Treated wood	
	4.3 Untreated non-packaging wood	4.3.2 Other untreated non-packaging wood
5. Plastic	5.1 Plastic packaging	5.1.1 Dense plastic packaging
	5.2 Non-packaging plastic	5.1.2 Plastic film packaging
		5.2.1 Non-packaging dense plastic
		5.2.2 Non-packaging plastic film
6. Glass	6.1 Glass packaging	
	6.2 Non-packaging glass	
7. Metal	7.1 Metal packaging	7.1.1 Aluminium packaging
	7.2 Non-packaging metal	7.1.2 Other metal packaging
8. Textiles, shoes and bags	8.1 Shoes and bags	8.2.1 Clothes
	8.2 Textiles	8.2.2 Other textiles
9. WEEE and batteries	9.1 WEEE	9.1.1 Fluorescent tubes, low energy and LED light bulbs
	9.2 Small batteries	
	9.3 Automotive accumulators	9.1.2 Other WEEE
10. Hazardous chemicals	10.1 Medicines	
	10.2 Other hazardous chemicals	
11. Miscellaneous waste	11.1 Miscellaneous packaging	11.3.1 Other combustible waste
		11.3.2 Rubble
	11.2 Diapers and sanitary protectors	11.3.3 Other non-combustible waste
	11.3 Other miscellaneous waste	

*Updates to the classification system

Results

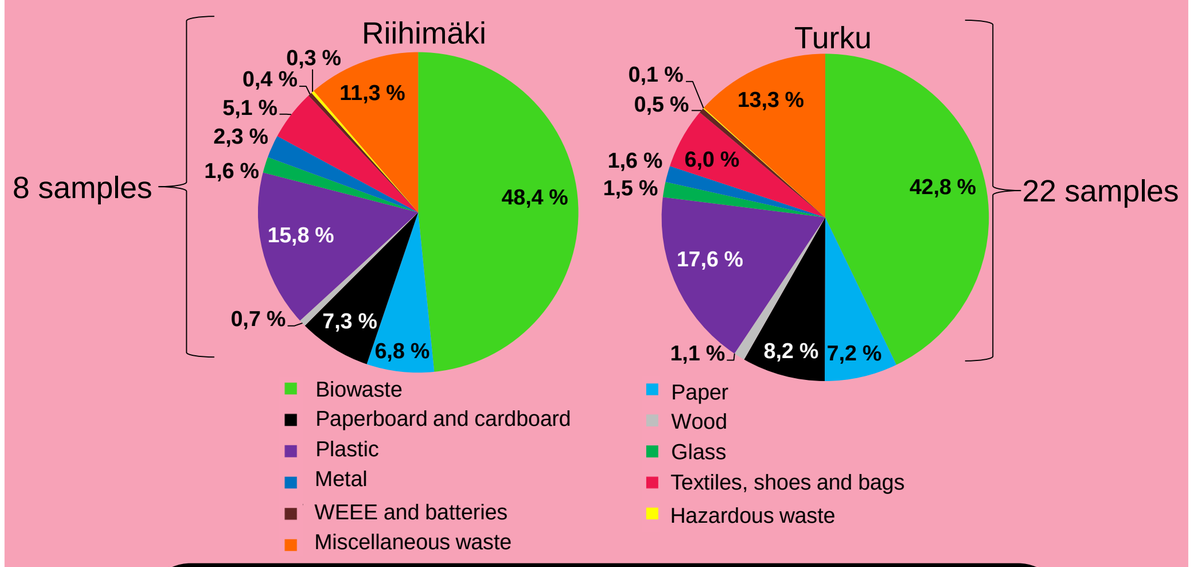
- **Survey**

  Finnish information needs concerning mixed MSW relate to:
  - Biowaste (kitchen waste)
  - Packaging waste (plastic packaging)

Improvement proposals to the classification system

Biowaste	Plastic	Recyclable waste	Hazardous waste
→ More accurate classification of kitchen waste	→ Classification according to resin types	→ Classification according to possibility for material recovery	→ All hazardous waste fractions in one category

- **Composition studies**



- **Biowaste, plastic and miscellaneous waste were the main fractions**
- **Biowaste consisted mainly of kitchen waste**
- **Sorting slower than expected → results are not statistically reliable**

Conclusions

- The updated method:
  - → Provides more information on the environmental impacts of mixed MSW (avoidable food waste)
  - → Enables more accurate monitoring of recycling

Publications

- Liikanen, M., 2015. Updating and testing of a classification method for mixed waste composition studies. Master's thesis.
- M. Liikanen[a], O. Sahimaa[b], M. Hupponen[a], J. Havukainen[a], J. Sorvari[c], M. Horttanainen[a]. Updating and testing of a Finnish method for mixed municipal solid waste composition studies.

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