

# Principles of municipal waste management in Finland and their applications in Helsinki ja Tampere Regions

FORUM OF MUNICIPALITIES  
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## THREE KEY DEFINITIONS

### The Finnish definition on municipal waste

Municipal waste means waste generated in permanent dwellings, holiday homes, residential homes and other forms of dwelling, including sludge in cesspools and septic tanks, as well as waste comparable in its nature to household waste generated by administrative, service, business and industrial activities. (The Finnish Waste Act 646/2011)

### The definition on waste management for operational arrangements

Waste management means the collection, transport, recovery and disposal of waste, including monitoring and supervision of such operations and the aftercare of disposal sites, and actions taken as a broker. (The Finnish Waste Act 646/2011)

### The definition on waste management for political regulation purposes

Waste management means common responsibility to take care of **consequences**, i.e. wastes, of production and consumption in purpose **to protect health and environment**, and **within this context** to use and save effectively natural resources.

- In the Finnish Waste Act (646/2011), this most important issue, i.e. the reason and the right of political regulation on wastes, is expressed in the first paragraph. Already in 1977, the Finnish parliament declared: waste management is so important issue that it cannot be left only on “shoulders” and willingness of individuals for fulfilling societal health and environment health and environment security.
- This definition has very often been ignored in debate in connection to commercial interests.
- There are no consequences without primary activities, this is why sound national economies cannot largely be based on capital revenues created in waste business.

# PRINCIPLES APPLIED IN MUNICIPAL WASTE MANAGEMENT

## Organization view

- Municipalities must always have the final responsibility on municipal waste management.
- Primary duty of municipal waste management is to guarantee high standard protection of health and environment.
- Municipal waste management must be fully visible for authority and citizen supervision and control.
- Municipal operators will work on not-for-profit basis (waste management fees for inhabitants are comparable to tax revenues).
- Municipalities must have supervision and control on the municipal waste management economy and effects of its implementation.
- Service purchases from commercial sector must be based on visible tender competition and done only, if the market offer makes competition sound and fair.
  - Long term (over 5 years) and whole service contracts do not fit well with these principles above, in addition, landfills require aftercare of several decades.
- Producer responsibility
  - - Focus must be in recycling, not in energy recovery.

## Operational view

- Pre-cautionary principle
- Environmental permit duty
- Duty to be aware of waste characteristics and amount
- Proximity and self-sufficiency principle
- Nominally free of charge services of hazardous waste sorts for citizens
- Waste hierarchy and related recycling and recovery targets

## Municipal obligations in waste management

### Municipal waste management authority:

- Municipal waste tariffs
- Municipal waste management orders
- Decisions on exemptions
- Transport system decisions
- Supervision of obligation to belong to the waste management system

### Municipal Waste Management organizer:

- General education and communication
- Hazardous waste management
- Collection and transport services
- Treatment (recovery, disposal) services
- Collection services for producer responsibility organizations



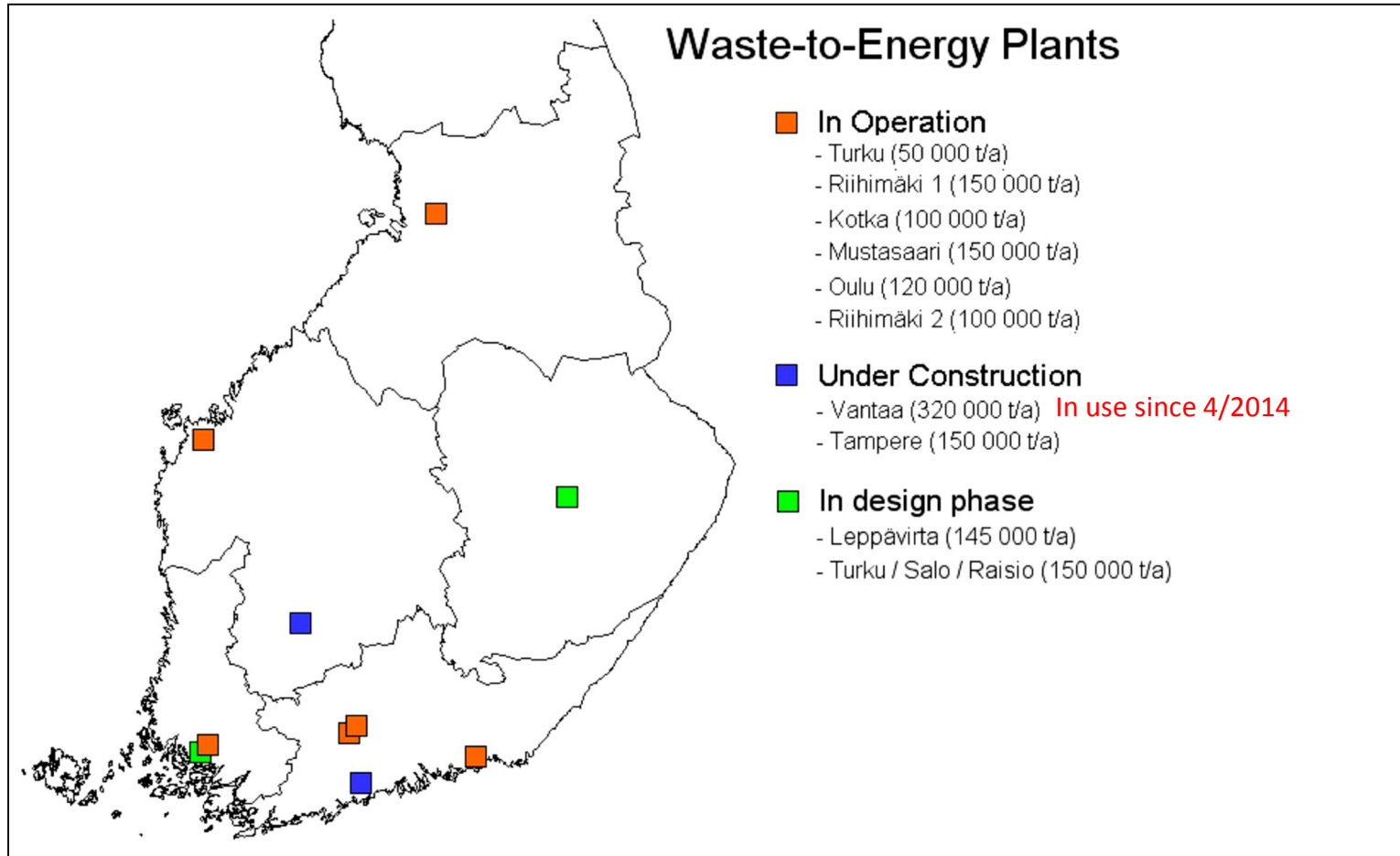
### Municipal and regional environment authorities

- Supervision
- Waste permits to operations

## CURRENT KEY DRIVERS

- **50% recycling rate for MSW by 2016**
  - Extended producer responsibility regulations, packages
  - National Waste Plan for 2016
  - EU Waste Framework Directive in the background
- **Landfill restrictions (almost a ban) for organic matter from 1.1.2016 onwards**
  - Criteria for organic carbon, TOC 10 %
  - For all type of wastes (for construction and demolition 1.1.2020 ->)
  - No direct landfilling of MSW possible
  - EU Landfill Directive in the background
- **Health protection**
  - Infectious wastes
  - Epidemic crisis

# Waste to Energy 2014



## MIXED MUNICIPAL WASTE – WHY INCINERATION AND NOT SOLID RECOVERED FUEL (SRF)?

- ❖ Mechanical Biological Treatment (MBT)- procedure experiences (Tampere and Forssa) since mid of 1990`s to mid of 2000`s can be concluded as follows;
  - SRF quality variation was to big one, particularly in salt concentration in terms of corrosion risk in conventional power plants.
  - Rejects from SRF processing for composting contained so much impurities, which made possible to utilize the composting output only as the cover layers of landfills to be closed. A close of landfills cannot continue for ever.
  - Why to put energy consumption and economic efforts for gaining SRF, if the same allover result at the level of whole waste management system entity can be achieved with lower costs?
- ❖ Every country needs an infrastructure for health protection
  - Health and social care sectors generate wastes, which owe a risk for societal epidemics. All societies in the world should have organized a system to minimize these risks. There are always diseases to be cured and risks for epidemic situations (e,g. Ebola) and these kinds of risks are higher than ever earlier.
  - “Fire is best societal “medicine”.
- ❖ Incineration plants make possible to use miscellaneous and low grade fuels.
  - In political and/or natural crisis situations, incineration plants make possible to guarantee a basic energy production.
- ❖ New political regulations
  - Targets for gaining material more for recycling.
  - Landfill restrictions of organic matter.



## Helsinki Region Environmental Services Authority (HSY) and Pirkanmaan Jätehuolto Oy (PJH)

Basic information	HSY	PJH
<b>Type of organisation</b>	Alliance of municipalities, includes in a role of the waste authority	Publicly owned not-for profit company
<b>Owners</b>	Helsinki, Vantaa, Espoo, Kauniainen	Tampere and 16 other municipalities
<b>Management region population</b>	1 128 515 (20,8 %)	426 391 (7,9 %)
<b>Management region land surface area, km<sup>2</sup></b>	791 (0,24 %) 1427 persons/km <sup>2</sup>	11 630 (3,4 %) 36,7 persons/km <sup>2</sup>
<b>Decision making body</b>	Gov board, 14 members, politicians	Gov board, 9 members, politicians + municipal officials
<b>Turnover 2013</b>	110 M€	38,8 M€
<b>Payments to commercial logistic contractors 2013</b>	17,1 M€	7,5 M€
<b>Number of staff</b>	130	62
<b>Number of clients 2013</b>	76 000	61 421 + 42954

## RECEPTION OF WASTE SORTS

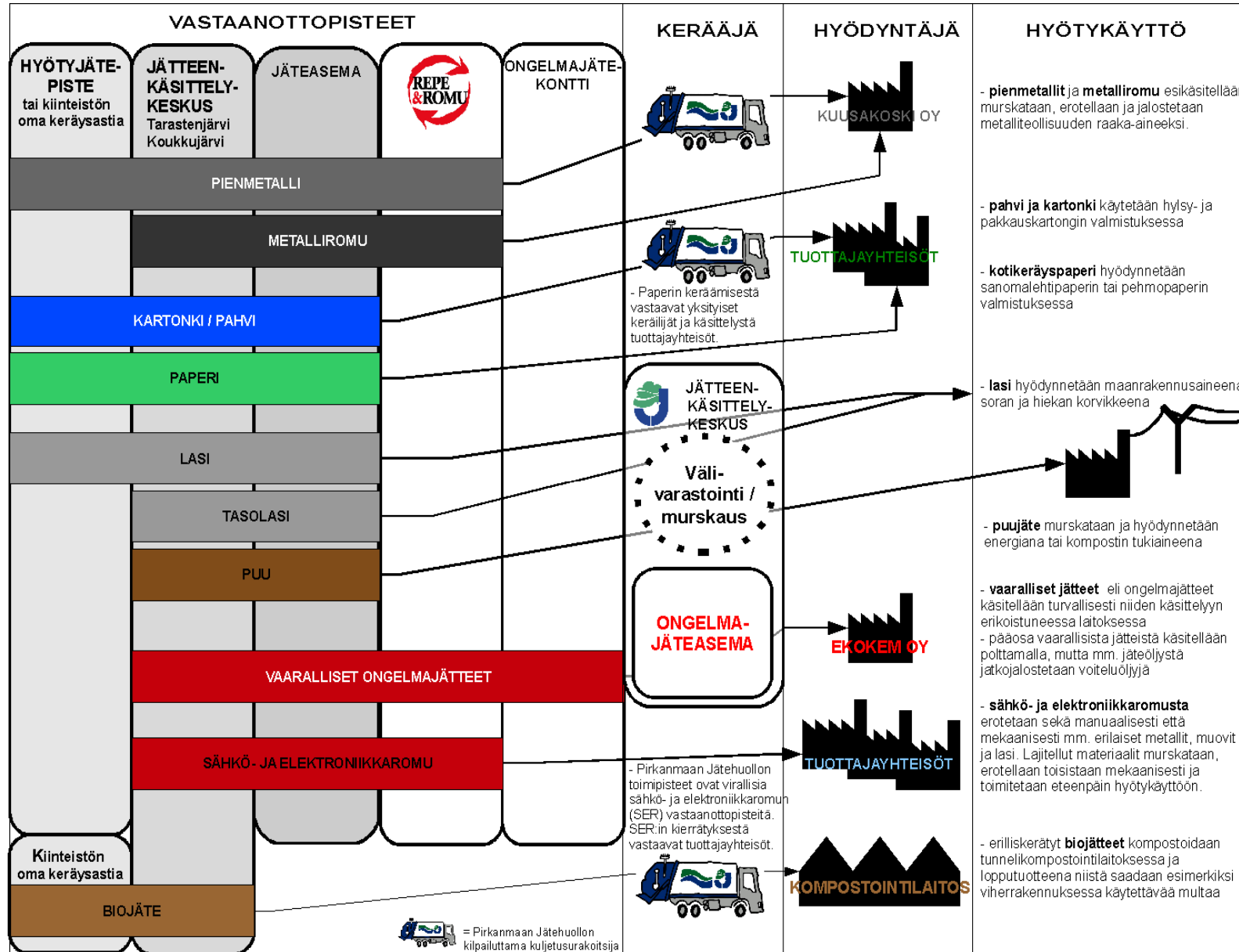
Receptions of waste sorts	HSY Waste sorts	HSY [t/year]	PJH Waste sorts	PJH [t/year]
<b>Door to door pick up</b>	Mixed waste	189 500	Mixed waste	84 009
	Bio waste	38 800	Bio waste	13 164
	Glass, small metal scrap and cardboard reception was started in the end of 2013		Glass, small metal scrap and cardboard reception on the voluntary basis.	
<b>Drop off sites and manned waste stations (wastes for recycling)</b>	Glass	1 950	Glass	1319
	Metal scrap	3 482	Metal scrap	3867
	WEEE	4 268	Plastic, still in experiment phase	200
	Wood	16 928	WEEE	3 226
	Cardboard	1 800	Wood	4987
Number of drop off sites: HSY 131 pcs, PJH 254 pcs	Energy waste	1 270	Cardboard	4718
<b>Manned waste stations</b> HSY/5pcs, PJH 21 pcs	Hazardous waste sorts	754	Hazardous waste sorts	1324
	Mixed waste	32 435		
<b>Waste treatment centres</b>	Slightly contaminated soil	16 152	Reclaimable and slightly contaminated soil	154 898
	Strongly contaminated soil	5 700	Ash and inert material	29 960
	Reclaimable soil	68 106	Special waste	11 535
	Construction and demolition waste	134 325	Mixed waste, industrial	38556
	Bio waste, industrial	14 155	Bio waste, industrial	10 630
	Hazardous waste sorts	5948	Sewage sludge	28 249
			Energy waste	14 484
		De-inking waste	39 955	
<b>Other operators</b>	Pharmaceuticals, batteries, car lubricants, wastepaper		Pharmaceuticals, batteries, car lubricants, wastepaper	

## TREATMENT FACILITIES AND EXTERNAL SERVICES

FACILITIES	HSY	PJH
<b>Incineration</b>	Vantaan Energia Oy / Contract co-operation	Tammervoima Oy / Joint venture company
<b>Composting/Digestion</b>	Composting plant, digester under construction	Sewage composting, biowaste composting, digester in design process
<b>Final disposal</b>	One landfill operation	Two landfills in operation
<b>Landfill gas recovery</b>	Landfill in operation plus two closed landfills	Landfill in operation plus two closed landfills
<b>External treatment services</b>	Metal recovery from incineration bottom ash, Recyclables recovery, Hazardous waste services	Metal recovery from incineration bottom ash, recyclables recovery, hazardous waste services

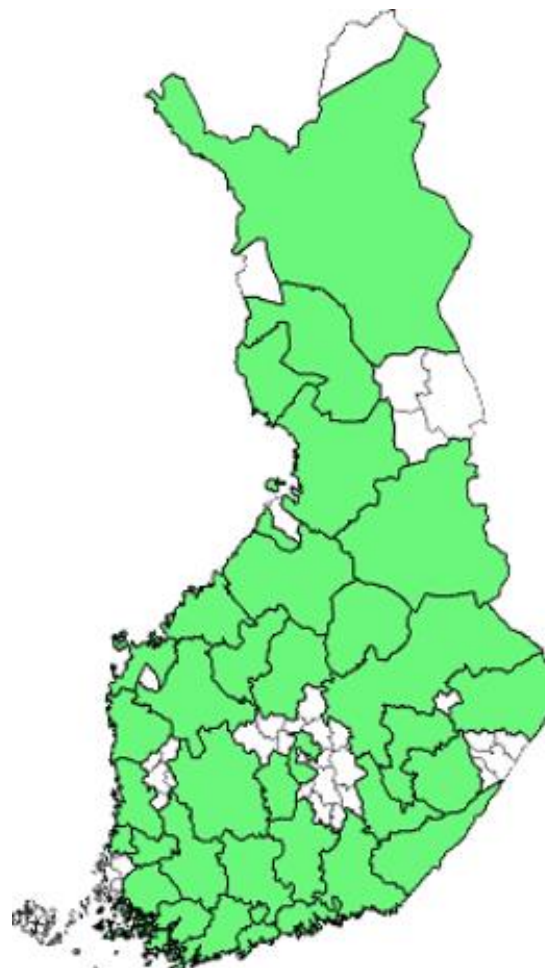
## LOGISTICS - COLLECTION, PICK UP AND TRANSPORT

PARAMETER/2013	HSY/Mixed waste	HSY/Biowaste	PJH/Mixed waste	PJH/Biowaste
Number of contract areas, pcs	50	12	60	11
Number of contractors, pcs	10	4	12	5
Empties of collection equipments, pcs/year	5 609 466	1 154 902	2 360 000	590 000
avg empties/day	21 575	4 440	9075	2270
Pick up fee €/pick up/equipment	Bin 600 – 660 ltr 8 – 9,5 € + VAT Deep cont. (5 m3) 75 – 90 € + VAT	Bin 240 ltr 5,5 – 7,75 € + VAT Deep cont. (0,8 m3) 35 – 40 € + VAT	BIN 600 – 660 ltr 7,95 € + VAT Deep cont. (5 m3) 69 € + VAT	Bin 240 ltr 3,95 € + VAT Deep cont. (0,8 m3) 24,25 € + VAT



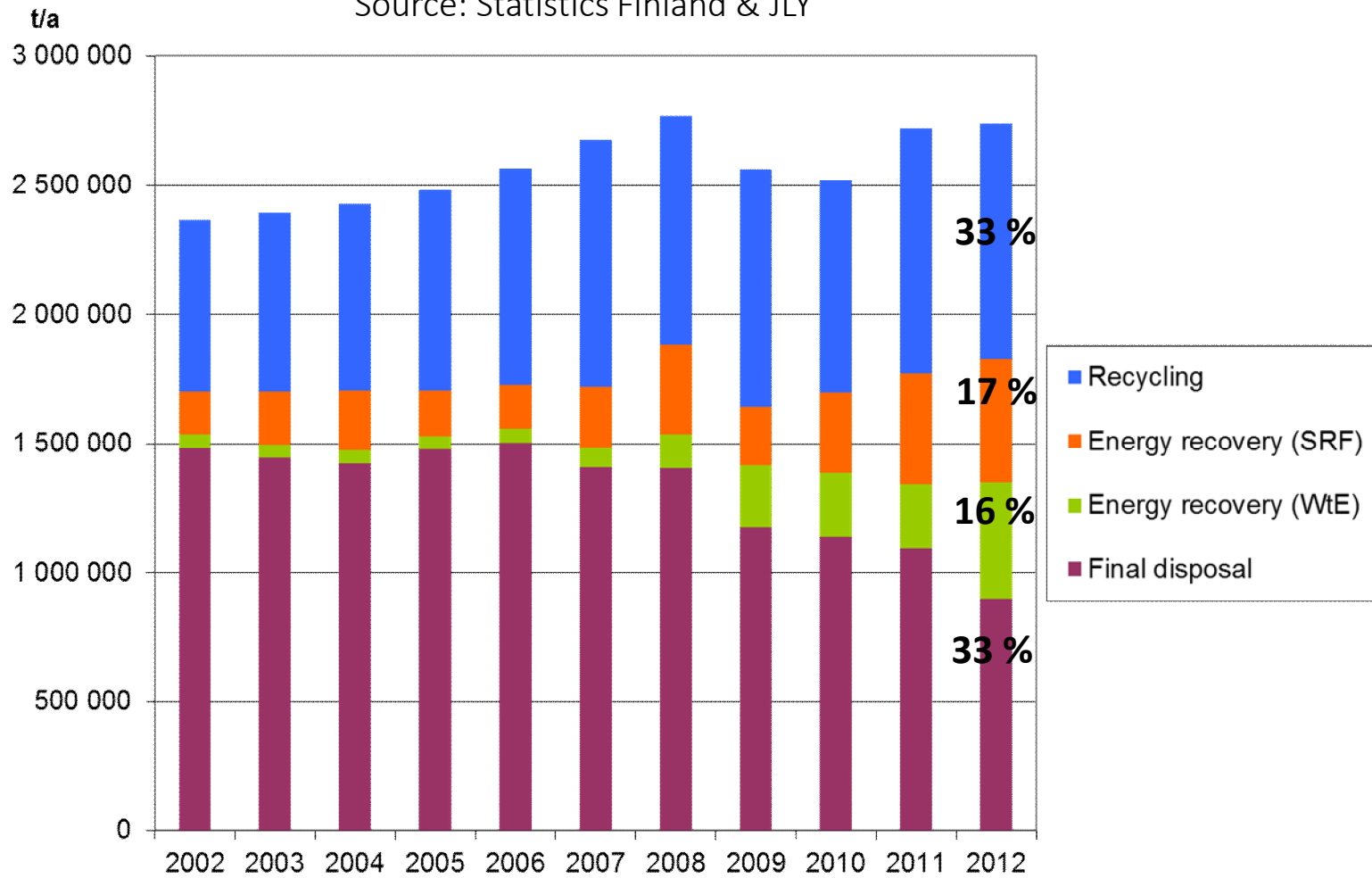
## JLY – Finnish Solid Waste Association

- ” Founded 1996
- ” 35 regional municipal waste management organisations
  - Cover 270 municipalities, about 5,2 million inhabitants (95 %)
  - Average region size appr. 140 000 inhabitants (30 000 – 1 000 000)
- ” Associated members (universities, consultants and other companies)
- ” JLY’s main activities
  - ” Lobbying and co-operation
  - ” Research and development
  - ” Communication
  - ” Education and events
- ” Staff 6 + 1 (part-time)
- ” Member of ISWA, MWE, CEWEP
- ” [www.jly.fi](http://www.jly.fi)



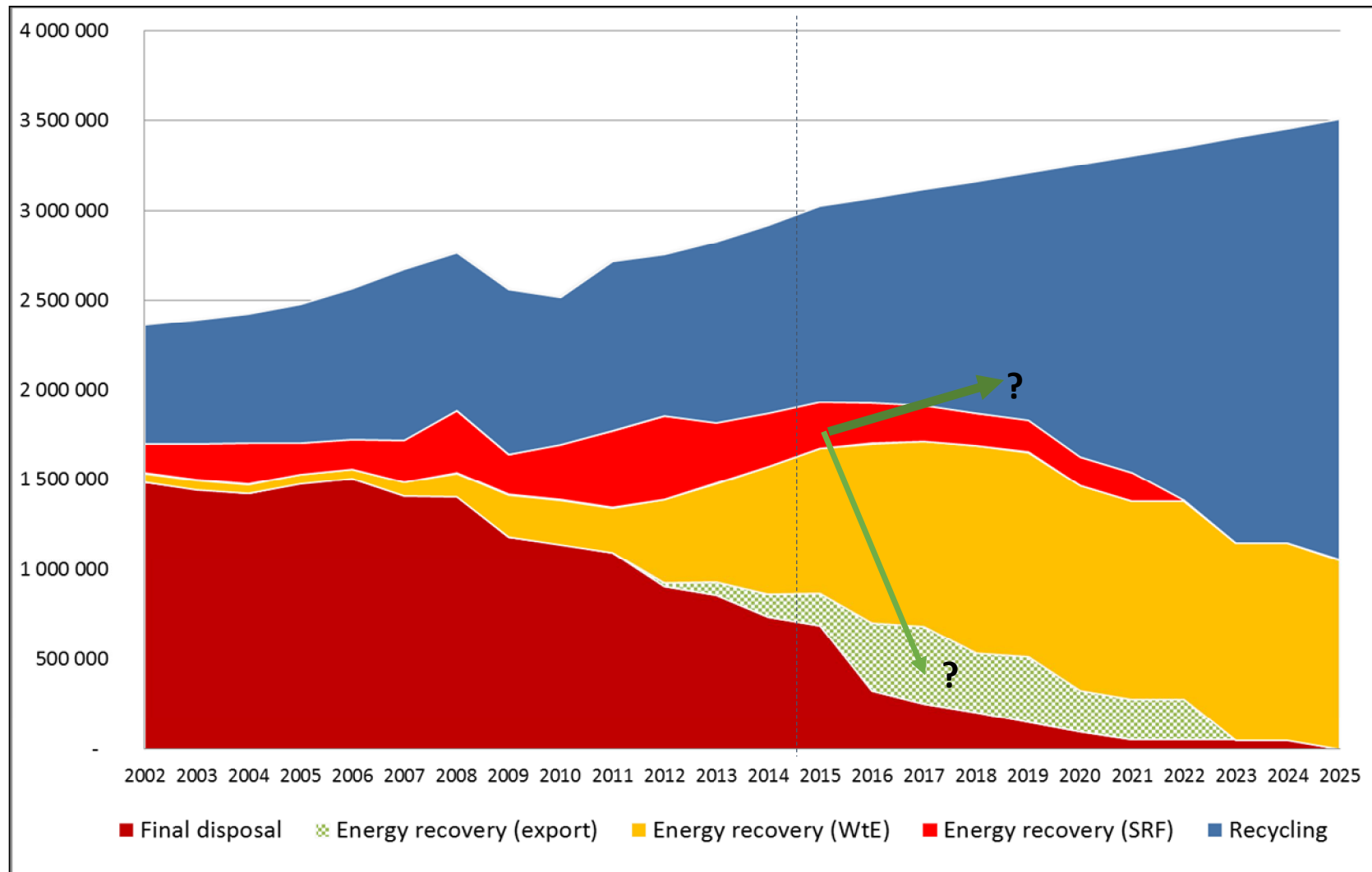
# Municipal Solid Waste 2002-2012

Source: Statistics Finland & JLY



12.3.2014

# MSW scenario 2002-2025 (t/a)





THANK YOU!