

Development of activity data and defining parameters

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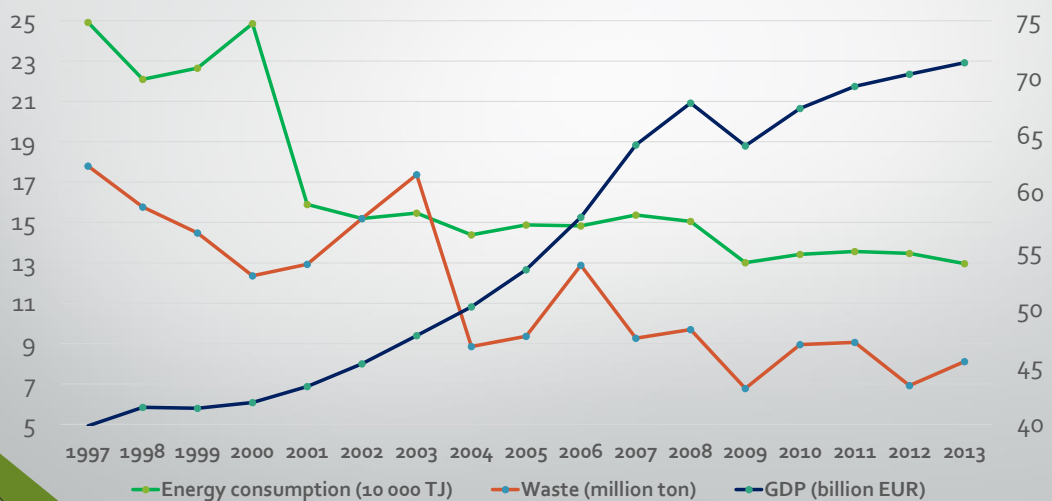
Activity data - Find a surrogate

- Use of surrogate
 - Verification of existing data (mass ballance)
 - Extrapolation of historical data (FOD models)
 - Extrapolation for projections
- Requirements on surrogate
 - Inflation independent (constant/real prices, production)
 - Targeted (total or per unit?)

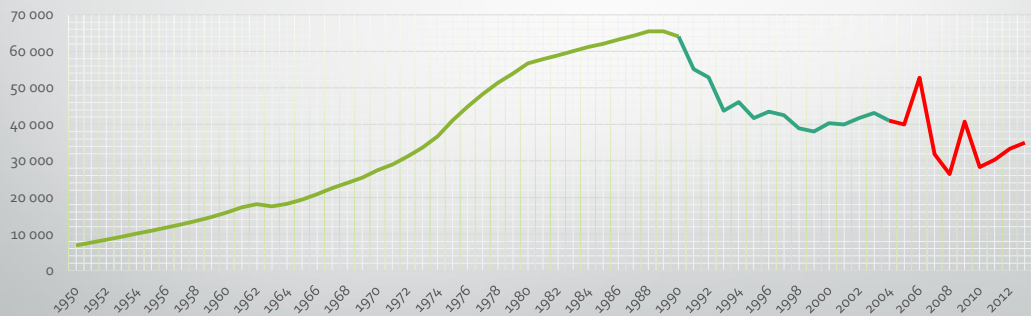
Surrogates

- GDP
 - General characteristics
 - Often not available for history data
 - Unreliable in transition period
- Production indices
 - Generally available, detailed
 - Unreliable in transition period
- Index of Real Wage, Household income
 - Defines money available for purchase of goods
 - Long time series
 - Good in reflecting changes in real income
- Electricity consumption
 - Who wastes energy, wastes material too.
 - Good for transition period

Energy, Waste and GDP in Industry



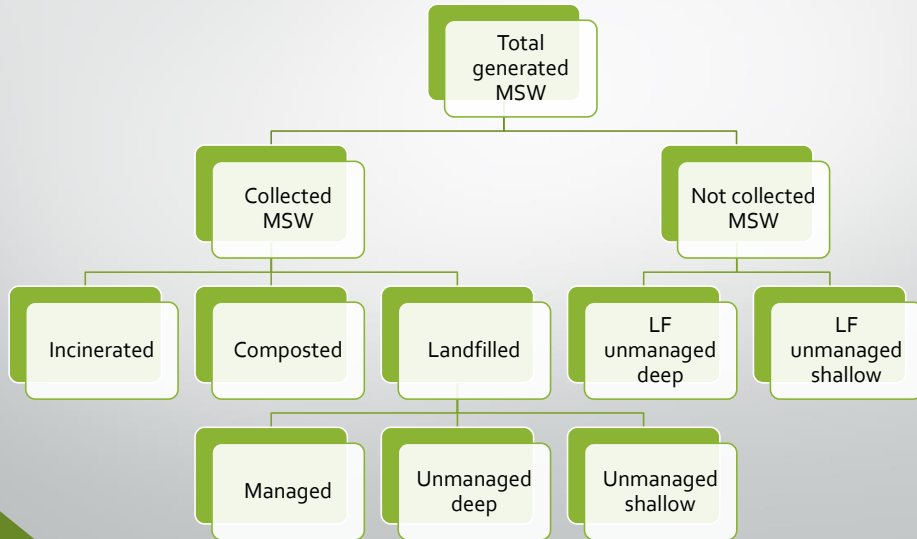
Group 03 (Wood, pulp, paper) extrapolations



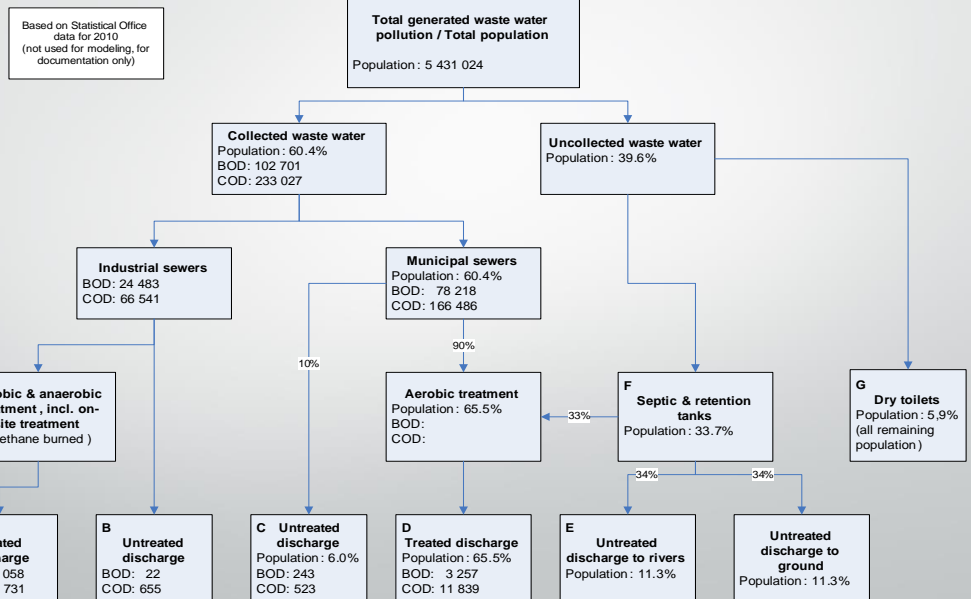
Activity data – transparency, completeness

- Map all streams
 - Fill in reported data, estimates
 - Calculate/estimate missing data
 - Verify all population/industries are covered
- Use decision trees
 - Helps to select Tier
 - Helps understanding your approach

Example – MSW



Example Waste water

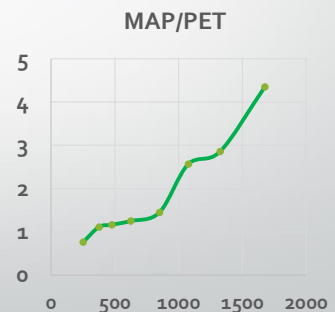


Parameters in Waste Sector

- Parameters in GL 1996 not sufficient
- Use parameters from GPG 2000 and GL 2006
- Easier move to higher tiers

GL 2006 methane generation rate constant

- MAT, MAP-> hydrometeorological institute, OK
- PET -> agriculture – irrigation
- Reciprocal MAP/PET = aridity index by Budyko
- MAP/PET strongly depends on altitude
- Prevailing altitude of SWDSs or of major towns



The role of uncertainty

- Balance uncertainty of parameters with uncertainty of data
- Disposal: methane generation potential Lo $\pm 50\%$, k -40% $+300\%$
- Biological treatment $\pm 100\%$ (EF)
- Incineration $\pm 30\%$ (EF CO₂) $\pm 100\%$ (EF N₂O) $\pm 50\%$ (EF CH₄)
- Waste water CH₄ $\pm 100\%$ (MCF)
- Waste Water N₂O -90% $+4900\%$ (EF)

Non-municipal waste

- EU List of Waste
 - 19 groups of waste
 - Identification of groups rich in biodegradable waste – for disposal
 - Identification of groups rich in C-fossil waste – for incineration

Gr	DOC	% of LF	Name of waste group
1		4,17%	Wastes resulting from exploration, mining, quarrying
2	1	2,99%	Wastes from agriculture, forestry, fishing, food preparation
3	1	2,08%	Wastes from wood processing, furniture, pulp, paper and cardboard
4	1	0,18%	Wastes from the leather, fur and textile industries
5		0,01%	Wastes from petroleum refining, natural gas and pyrolysis coal
6		0,01%	Wastes from inorganic chemical processes
7		0,18%	Wastes from organic chemical processes
8		0,10%	Wastes from paints, varnishes, adhesives, sealants and printing inks
9		0,01%	Wastes from the photographic industry
10		41,48%	Wastes from thermal processes
11		0,08%	Wastes from chemical surface treatment and coating of metals
12		0,19%	Wastes from shaping and surface treatment of metals and plastics
13		0,03%	Oil wastes and wastes of liquid fuels (except edible oils, 05 and 12)
14		0,00%	Waste organic solvents, refrigerants and propellants
15	1	1,09%	Waste packaging; absorbents, wiping cloths, filter materials
16		1,04%	Wastes not otherwise specified in the list
17		35,46%	Construction and demolition wastes
18	1	0,04%	Wastes from human or animal health care and/or related research
19	1	10,55%	Wastes from waste facilities, waste water treatment plants

Thank you

- Get the BIG picture
- Identify surrogates / drivers
- Are parameters as good as your data?