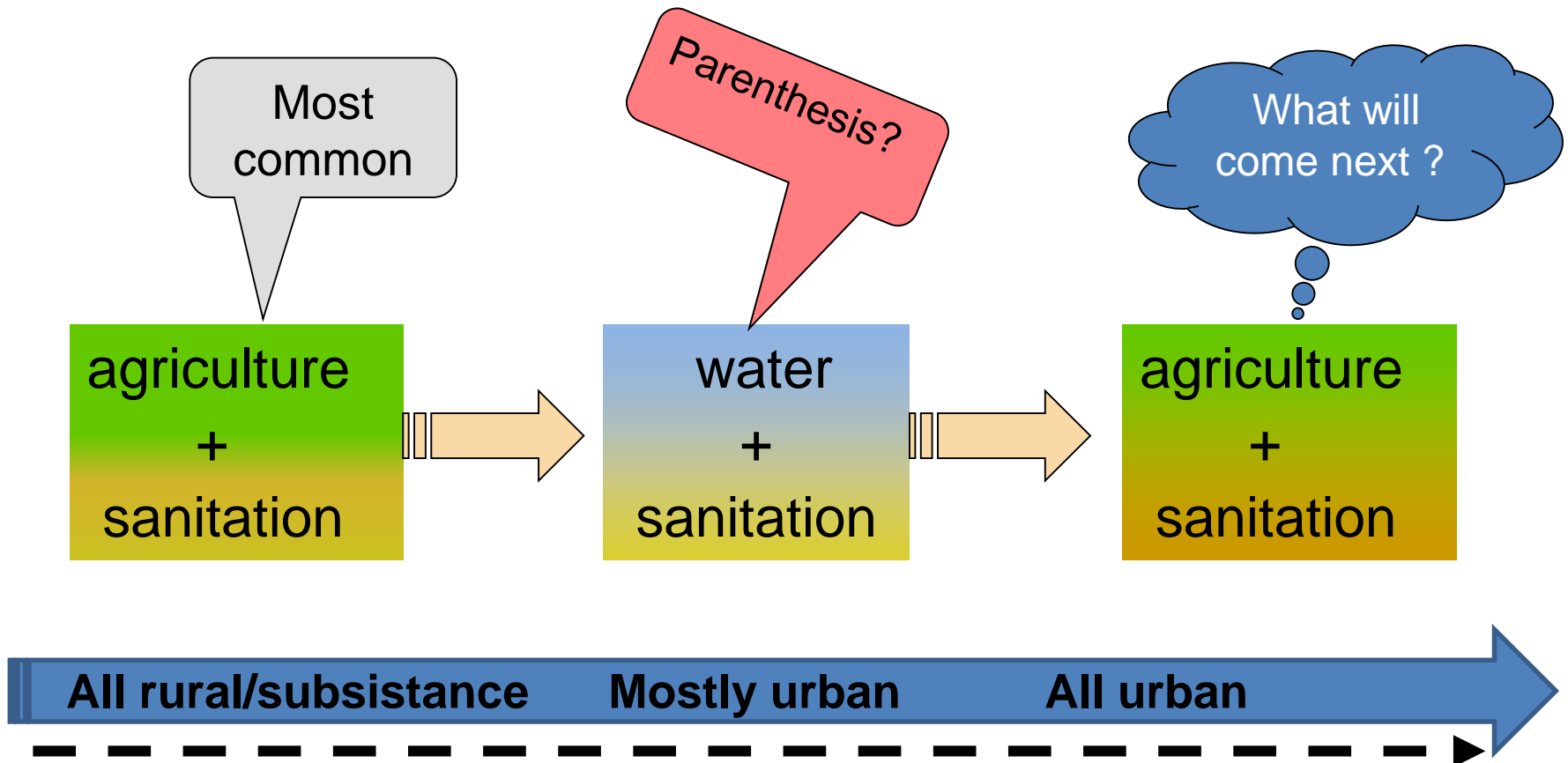


The Future of Sanitation – a return to circular systems



Presentation at Håkan Jönsson Symposium, SLU
October 25, 2017

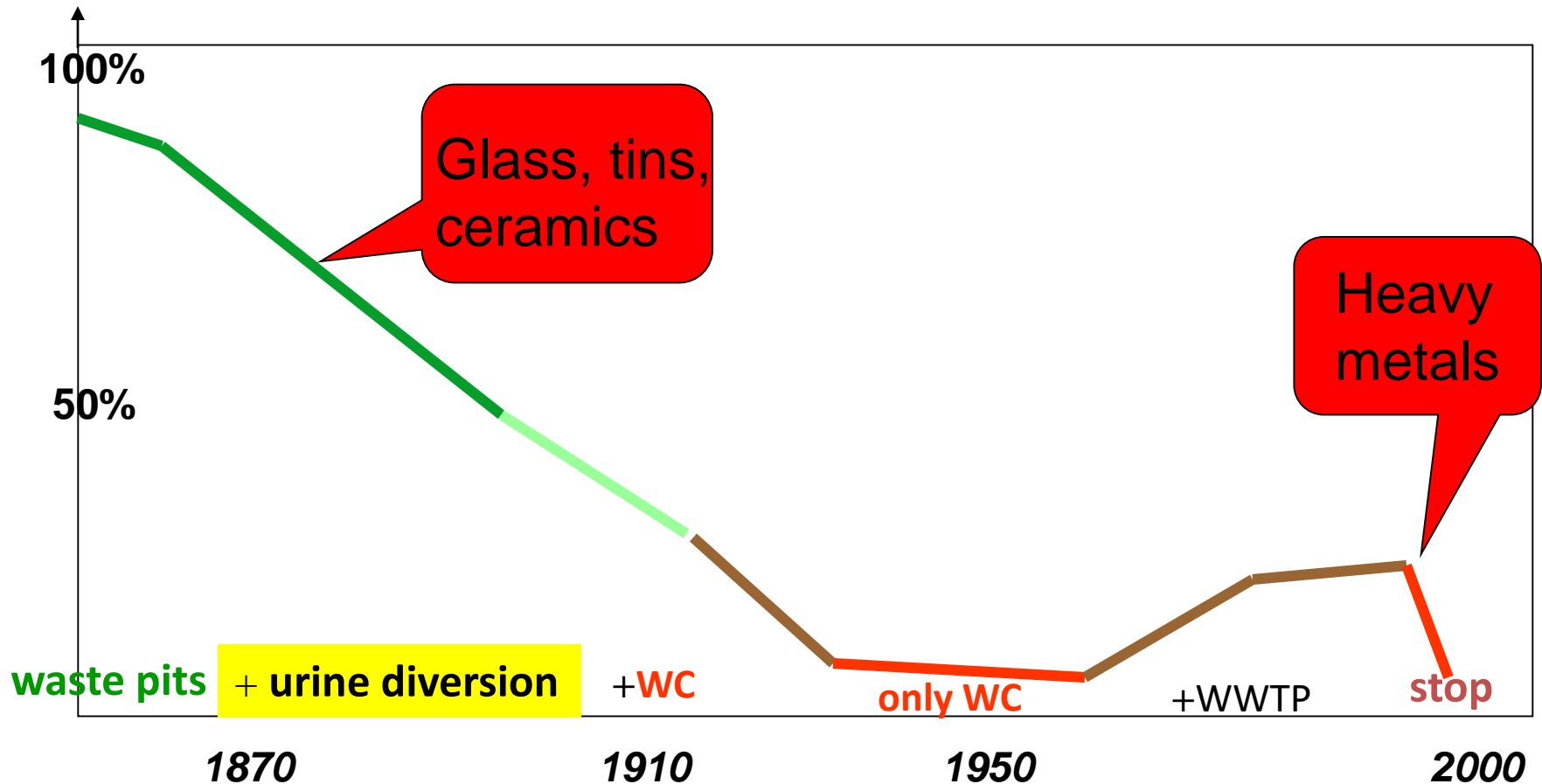
Was the strong link between the water and sanitation sectors in the 20th century a brief detour in human history?



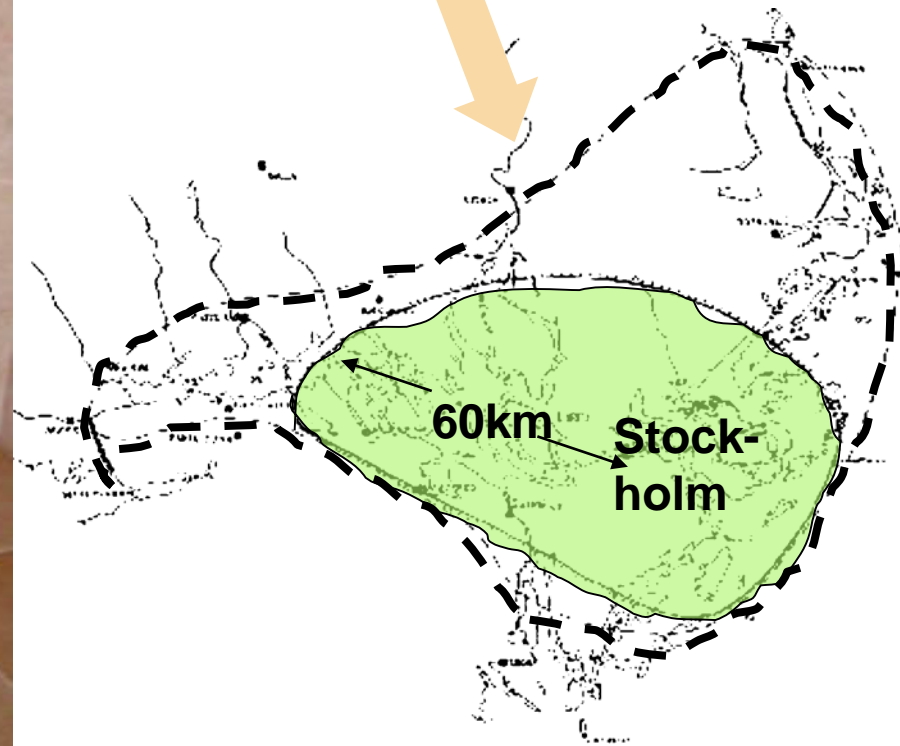
Actual reuse of nutrients for urban agriculture & food security

(in Swedish towns 1850 – 2000)

*Proportion nutrients
being reused*



Urine-diverting toilet in the 1860s and sanitation footprints 1910

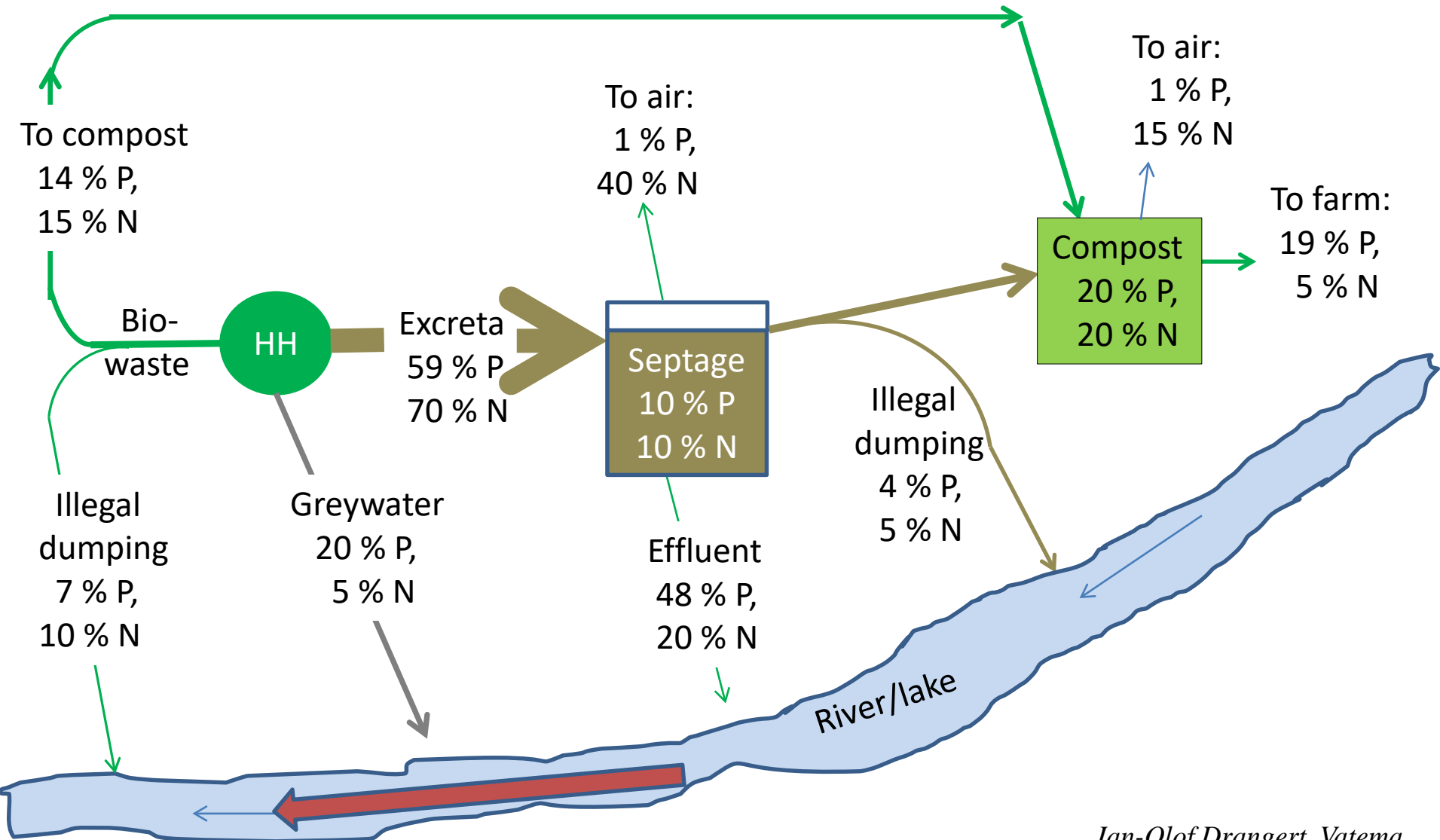


Piped or pipe-less cities for waste transport

Period	Solid waste		Excreta		Wastewater
	street-	kitchen-	faeces	urine	
1800	Earth pits for all household waste and content emptied in garden or on nearby farm			Disposed of in streets or in yard	
1870	Disposed of in streets or in yard		Latrine buckets of metal	Urine and greywater to a septic tank/waste pit or straight to water body	
1900	Container for solid waste collection		Black (WC)- and greywater in pipe to water body without any treatment		
1950	Solid waste incinerated Some garbage sorted		Wastewater treatment plants being built		
1970	Sorting of garbage and reuse		Some sludge applied on farmland		
2000	Scenario 1: grinder for organic kitchen waste, increased mixing of waste and incineration of the sludge				
	Scenario 2: garbage sorted in more fractions, which are treated separately and used in production of new products				

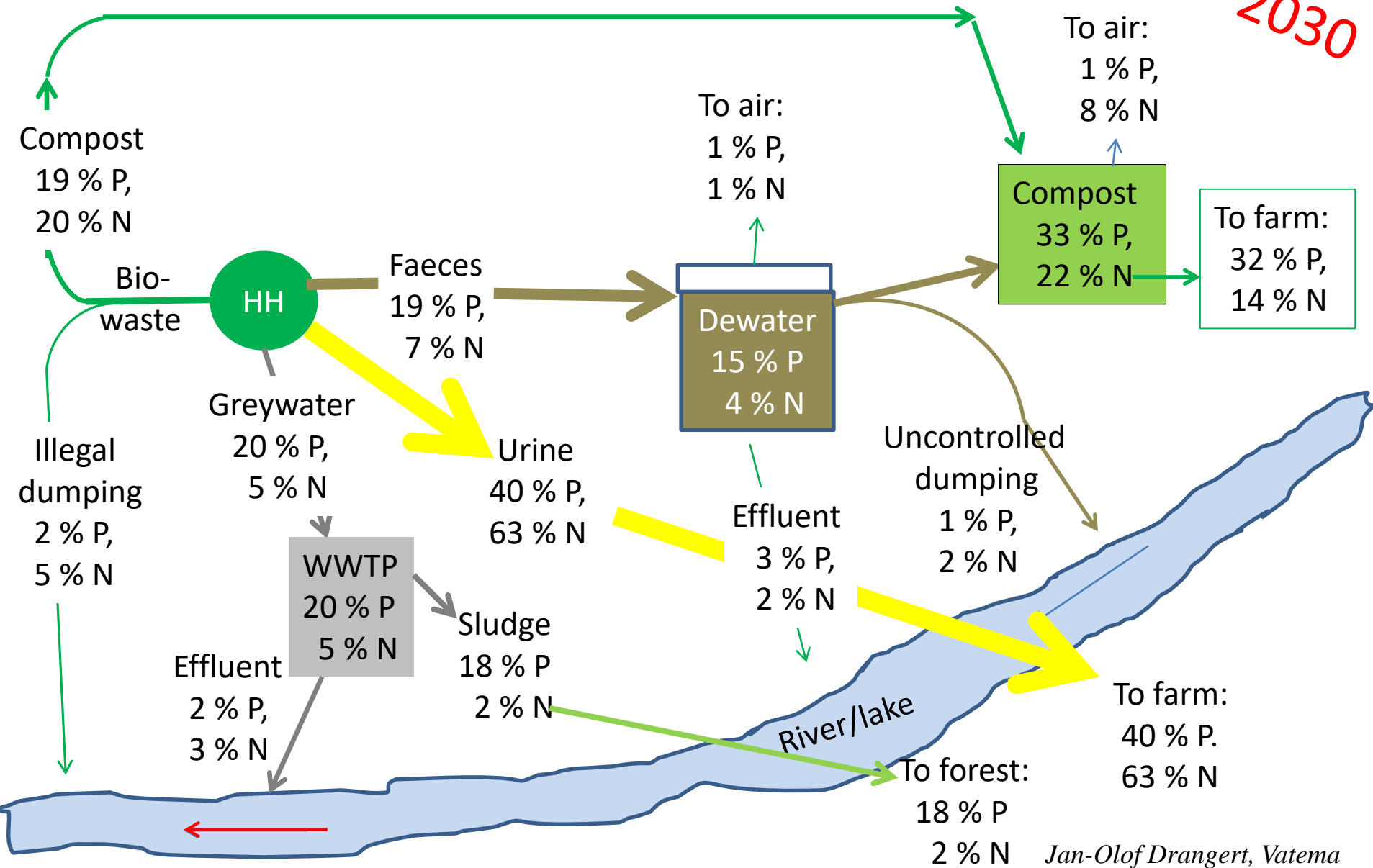
Nutrient flows originating from households

Today



Nutrient flows originating from households

Year
2030

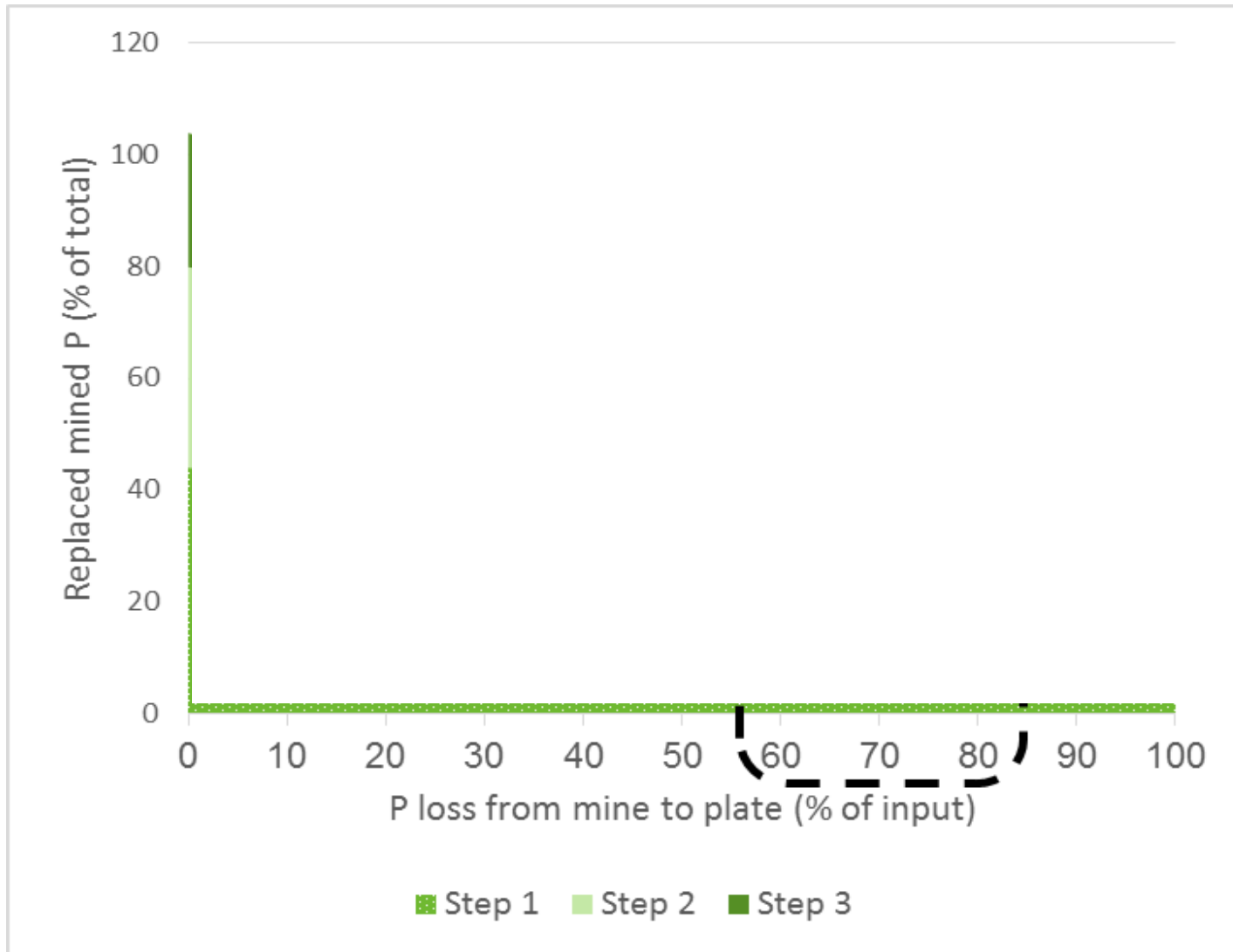


Strategies for sanitation improvements

Principle: *mix as few flows as possible*

- Organic \neq other solid waste
- Stormwater \neq sewage
- Industrial \neq household wastewater
- Black toilet water \neq greywater or
- Faeces \neq urine

Solid and liquid waste hierarchy: reduce, reuse and recycle P in the EU



Sustainable Sanitation for the 21st Century

A Sourcebook and a set of powerpoints

support material for training of professionals
in the sanitation and water sector

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A holistic sanitation selection algorithm

