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Comparison of European substance flow analyses (SFA) of phosphorus

Experiences regarding data quality
and uncertainties





- Comparative analysis of seven European SFAs
 - Austria (Egle et al. 2014)
 - Germany (Gethke-Albinus 2012)
 - Sweden (Linderholm et al. 2012)
 - Netherlands (Smit et al. 2010)
 - France (Senthilkumar et al. 2012, 2014)
 - UK (Cooper & Carliell-Marquet 2013)
 - Switzerland (Binder et al. 2009)
- Focus of this presentation not on actual results but on the following two questions:
 - (i) how did the authors of the SFAs deal with data uncertainties?
 - (ii) where did data on mass flows, P concentrations and P flows used in the SFAs come from?

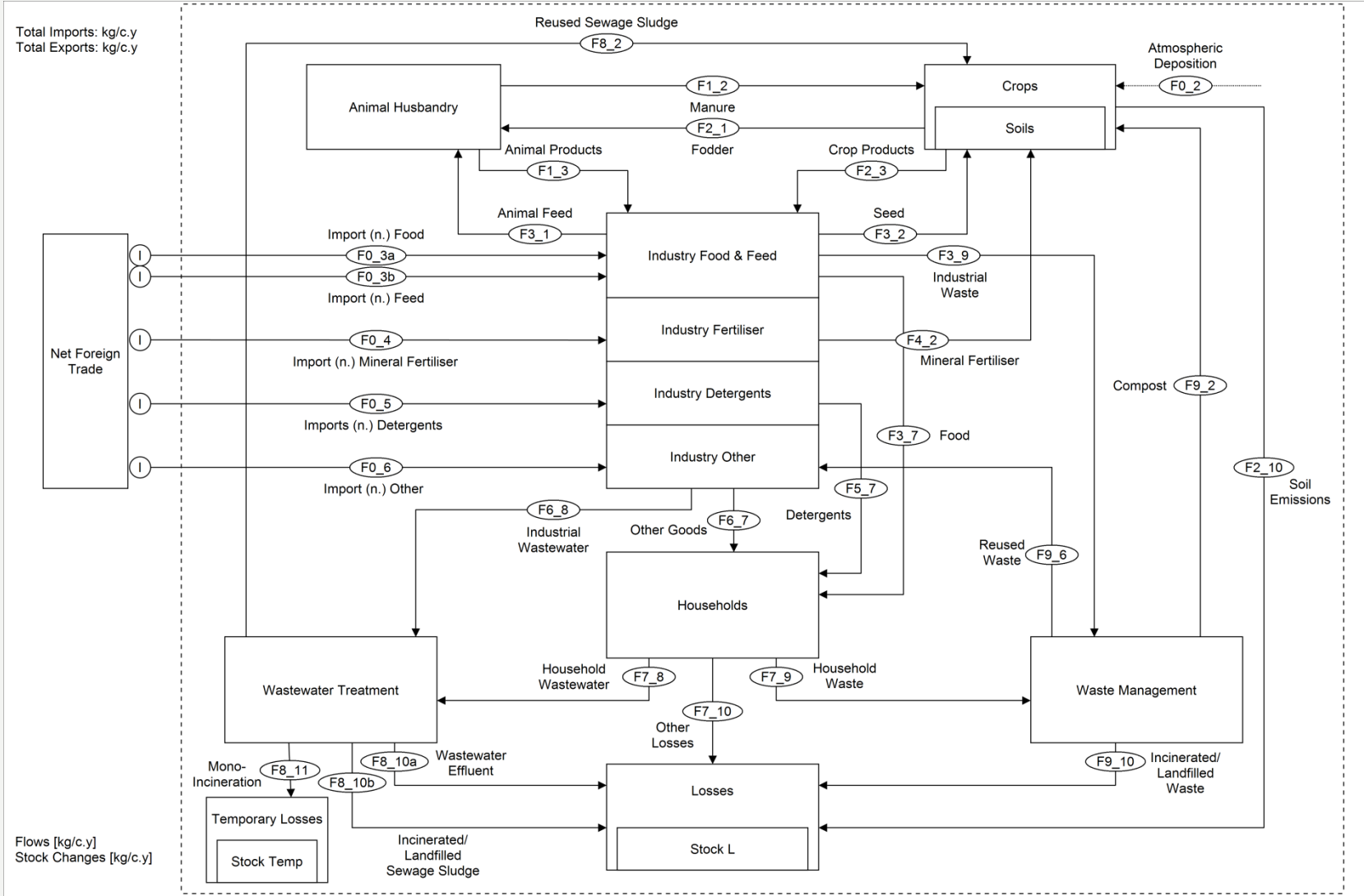


Data uncertainty has been considered very differently in the SFAs analysed:

Country	Uncertainty analysis	Integration of uncertainties into calculations
Germany	No	No
France	Cross-checking of data	No
Netherlands	Descriptive approach	No
Austria	Hedbrandt & Sörme (2001)	Uncertainty intervals for every flow
Sweden	Hedbrandt & Sörme (2001)	Uncertainty intervals for total P surplus of system
UK	Combination of cross-checking and Hedbrandt & Sörme (2001)	Uncertainty intervals for every flow
Switzerland	Classification of data and validation of flows with high uncertainties	Uncertainty intervals for every flow (absolute and relative)

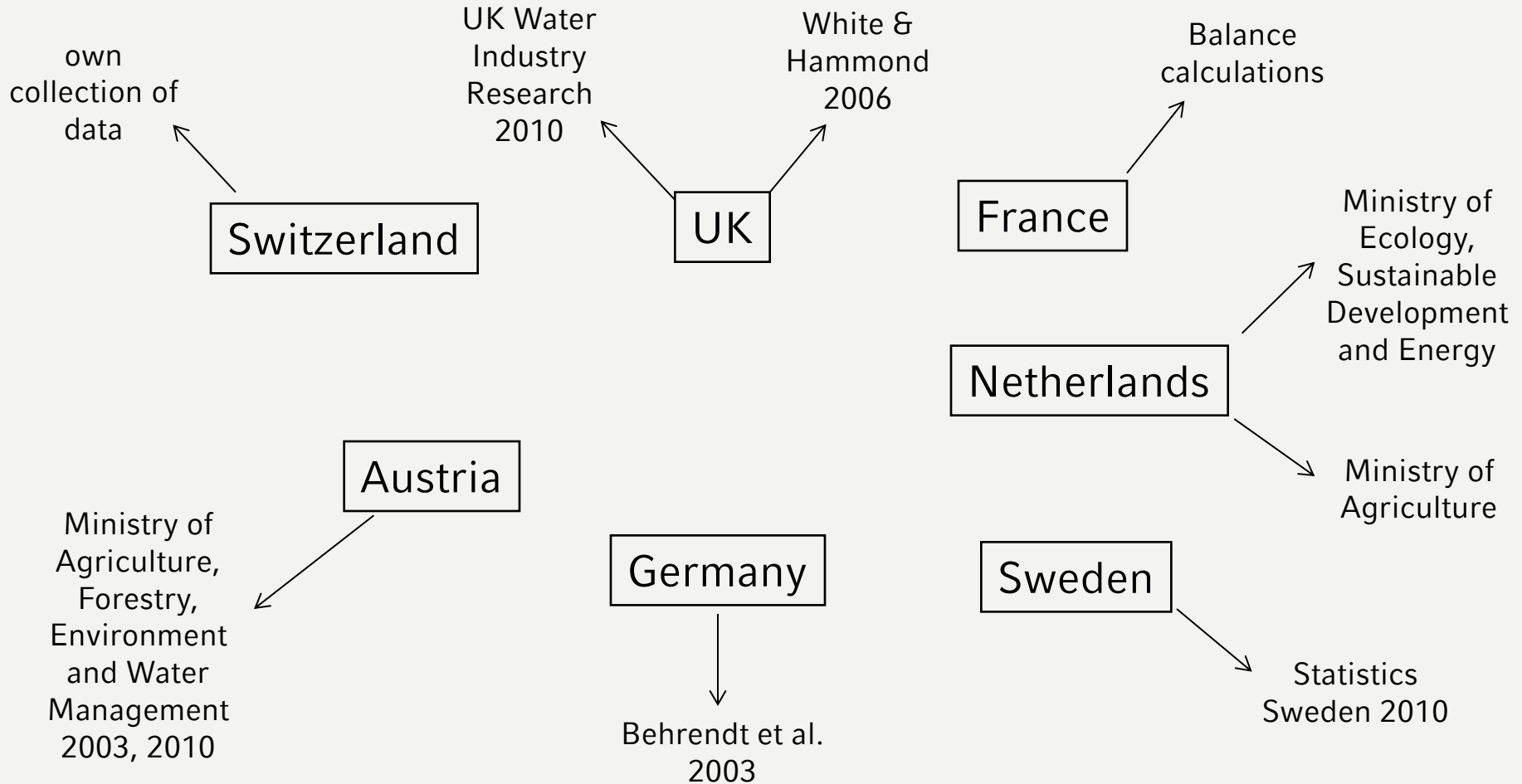


- Analysis of uncertainties and its integration in calculations of SFA/MFAs is receiving attention, however approaches (mainly based on classification of data) were applied differently
- Researchers' task to provide more standardized methods/approaches in order to reduce the subjective character of uncertainty assessments and increase comparability between SFAs (see e.g. Laner et al. 2014)





Example: P in wastewater effluent





- Different data sources hamper the comparability of SFA results
- Centralized databases and standards for P-related data needed (for which mass flows, P flows and P content?)
- Comprehensive data monitoring as a basis for P flow monitoring (P flow monitoring tools could facilitate annual updates of (national) SFAs; example: P-MonitoringTool 1.0 developed by Binder et al. 2009 for the Swiss Federal Office of the Environment FOEN)



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