

Separate treatment of urine and feces facilitates resource recovery

Conceptual recovery matrix

Resource recovery from urine

Volume of concentrate	Quality of main liquid output		
	no liquid	valuable	waste
< 10% of urine	solar evaporation*	distillation*	precipitation stripping
> 10% of urine			membranes

Resource recovery from feces

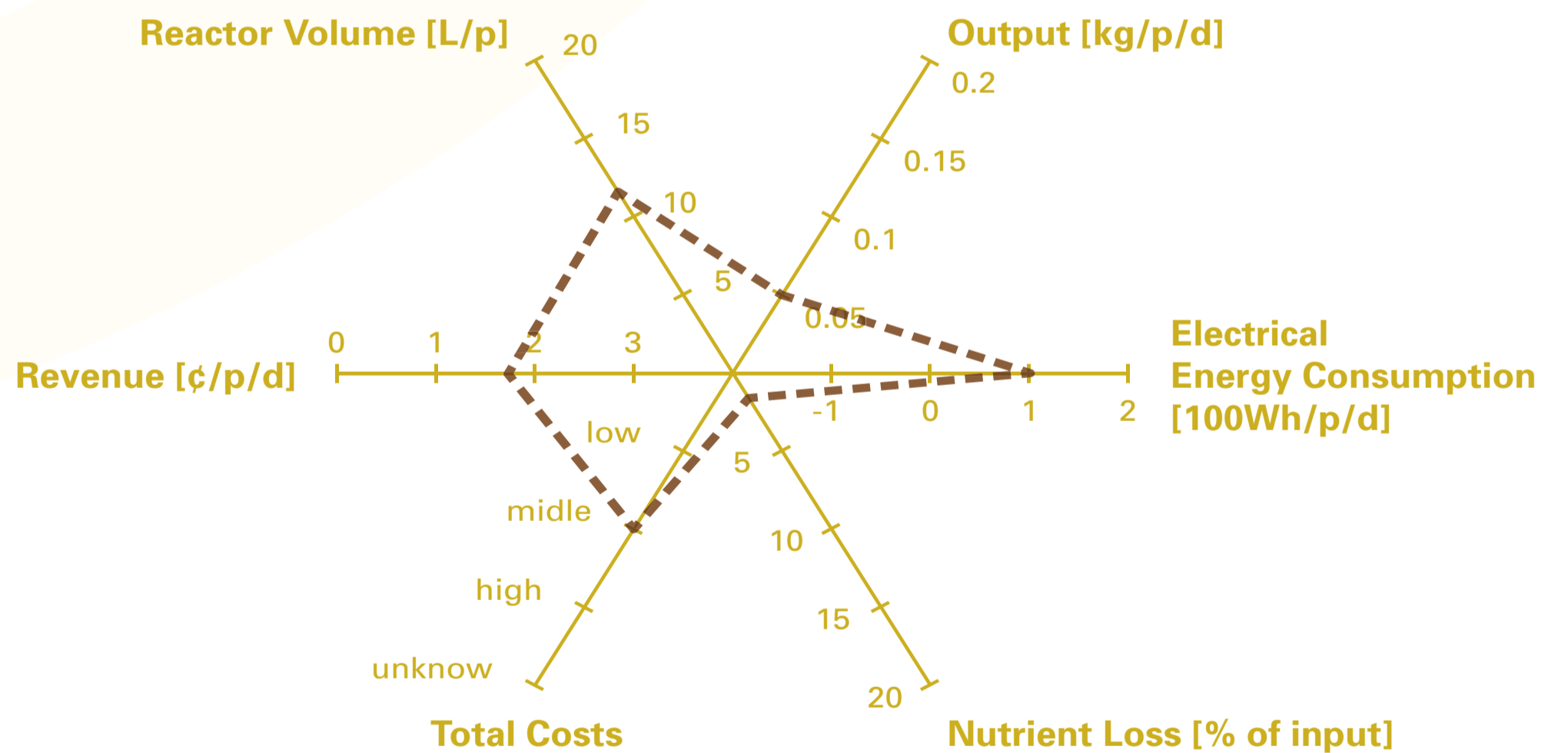
Quality of solid output	Quality of main liquid output		
	no liquid	valuable	waste
organic	biological & chemical treatment		
organic inert	pyrolysis*		hydrothermal treatment
ash	incineration* & plasma gasification		

* Needs pretreatment such as stabilization or drying



Partial nitrification of urine as pre-treatment for distillation. Distillation is currently being optimized with an industrial partner. www.eawag.ch/vuna

A tool was set up for rapid evaluation of technologies along six dimensions. Technology Readiness Level for small-scale process is a major problem.



Radar plot for nitrification of urine followed by distillation. The process has been developed at Eawag to TRL 5 at RRP scale. TRL 7 is possible by Dec. 2013.

3

diversion
for safe sanitation ooo

Resource Recovery Plant

Design by EOOS