Phosphate fertilizer from urine – The KaPURe Process

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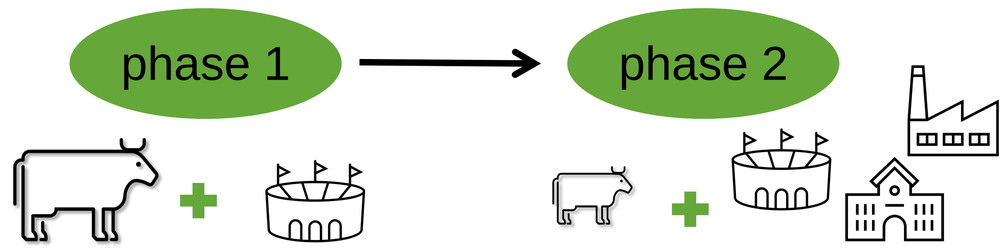
Approach

- currently unused **urine** now processed in a circular economy
- **unproblematic composition** without heavy metals[1]
- **urine collection**:



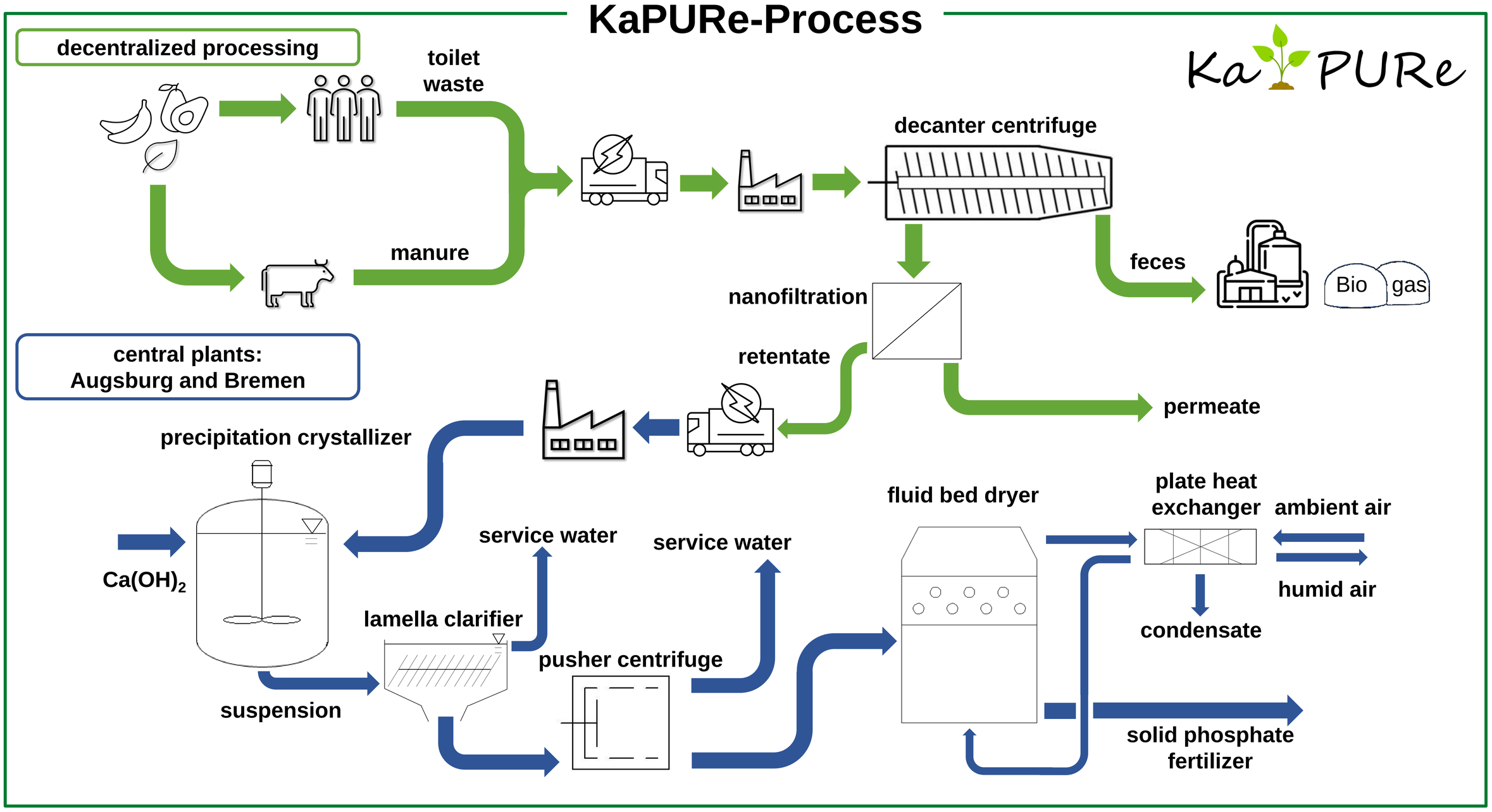
[1] K. M. Udert, T. A. Larsen, W. Gujer, Fate of major compounds in source-separated urine, Water Science & Technology, 54 (2006) 413.

Product

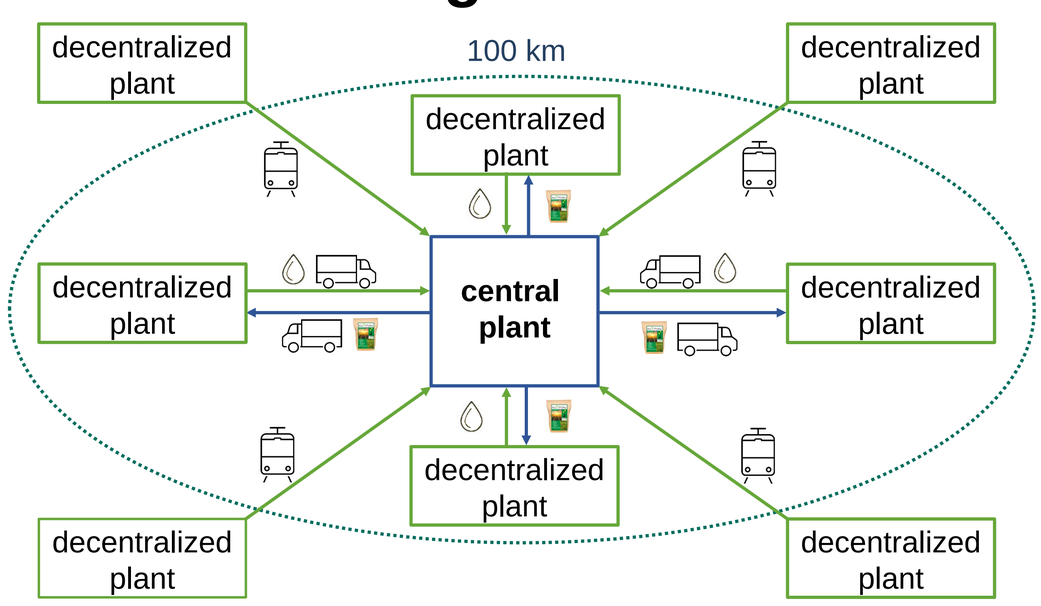
- 49 w.-% $CaHPO_4 \cdot 2\,H_2O$
- 49 w.-% $CaSO_4 \cdot 2\,H_2O$
- 2 w.-% moisture
- plant availability of phosphate: **93 %**[2]
- environmentally friendly
- **sustainable** resources

[2] W. Römer, Phosphor-Düngewirkung von P-Recyclingprodukten, Korrespondenz Abwasser, Abfall, 60 (2013) 202.

KaPURe-Process



Logistics



Stats and Facts

- **95 %** phosphate yield
- **no harmful chemicals** used in the process
- modular design **easily scalable**
- **independent** of urine origin
- **zero carbon emissions** scope 2 by driving freight traffic with green electricity
- yearly **profit** of **198 Mio. €**