Resources Recovery and Digestate Utilisation

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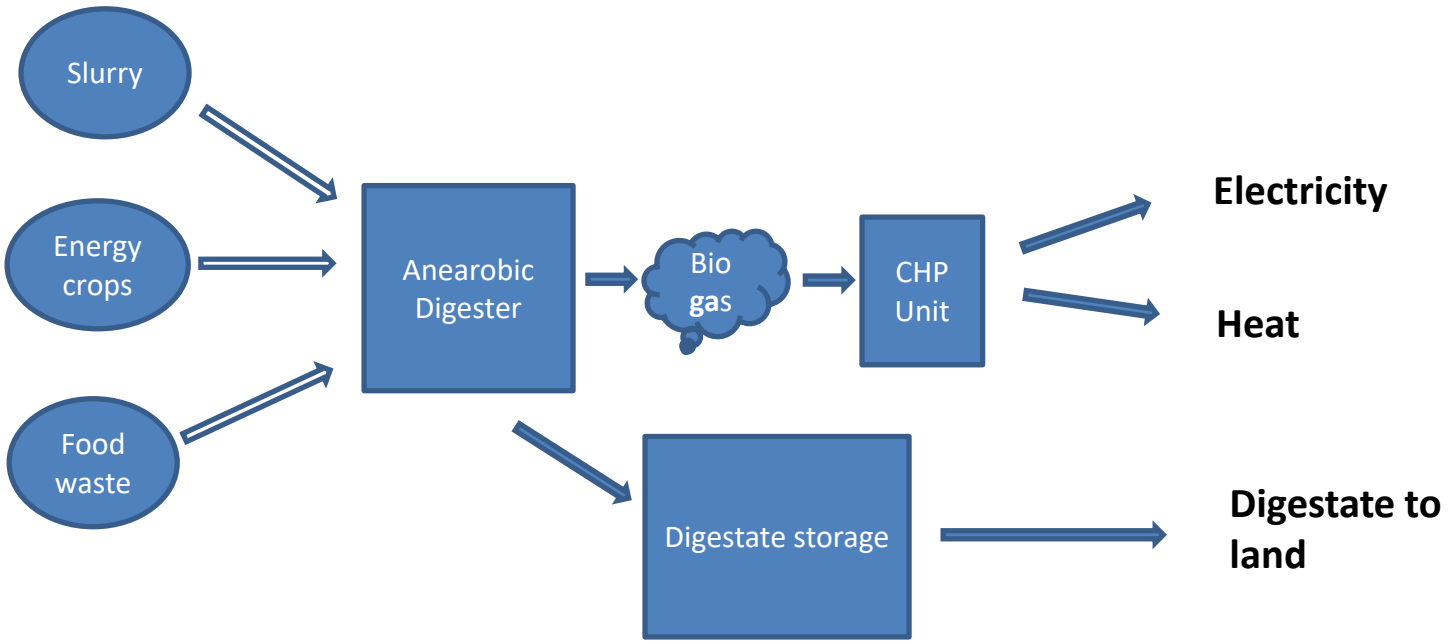
Membranology
Advanced Membrane Applications

Current situation



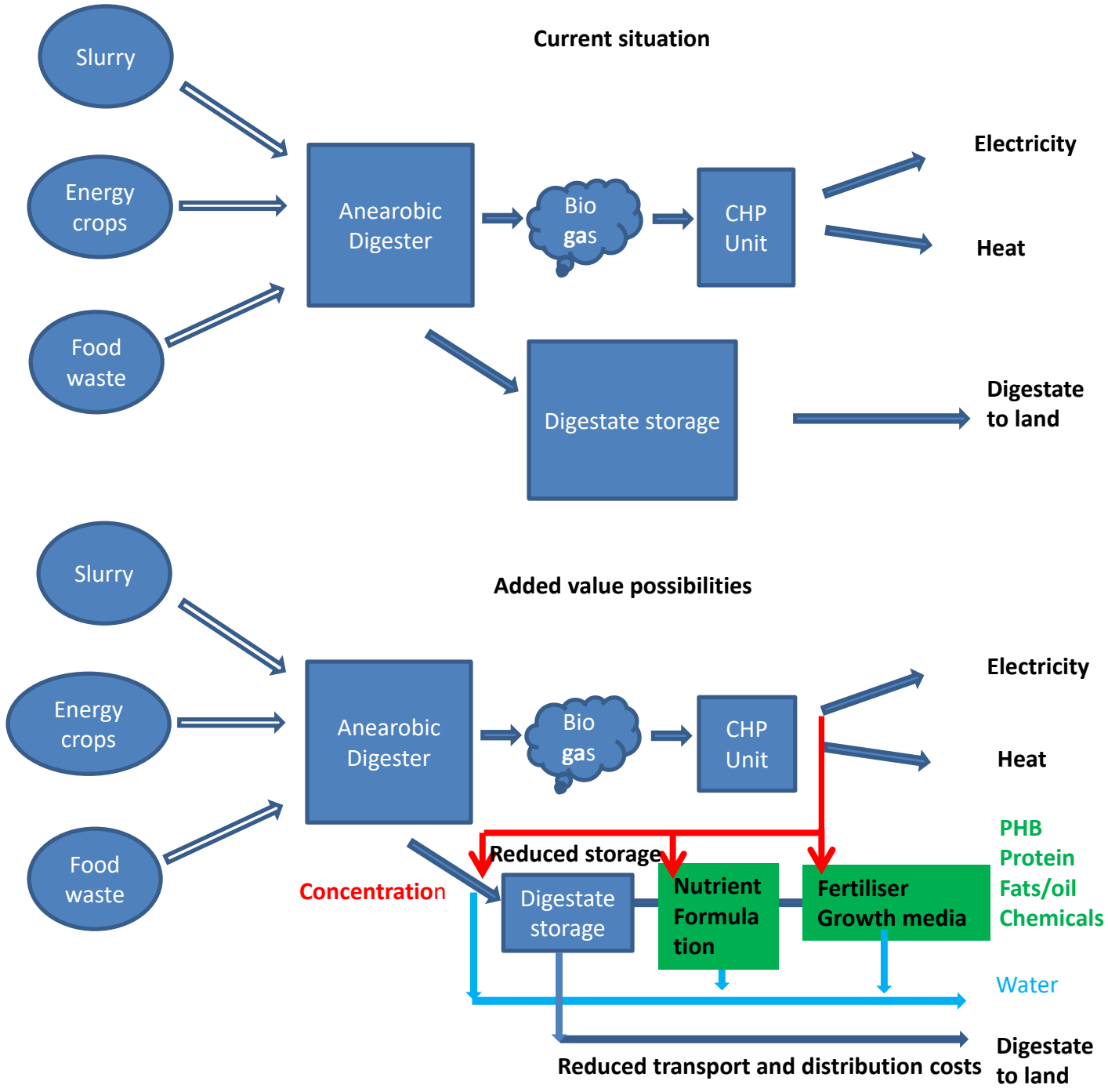
The Challenges of Anaerobic Digestate fluids

The problems of digestate:

- **Environmental Hazard**
- **Difficult to handle**
- **Dilute**
  - **Storage,** Losses to atmosphere
  - **Transport,** Cost of transportation limits
- **Variable composition,** Value limited by variable composition and efficient utilisation
- **Seasonal use,** Effective Land spreading limited to spring

Concentrating these fluids alleviates many of these problems and adds value

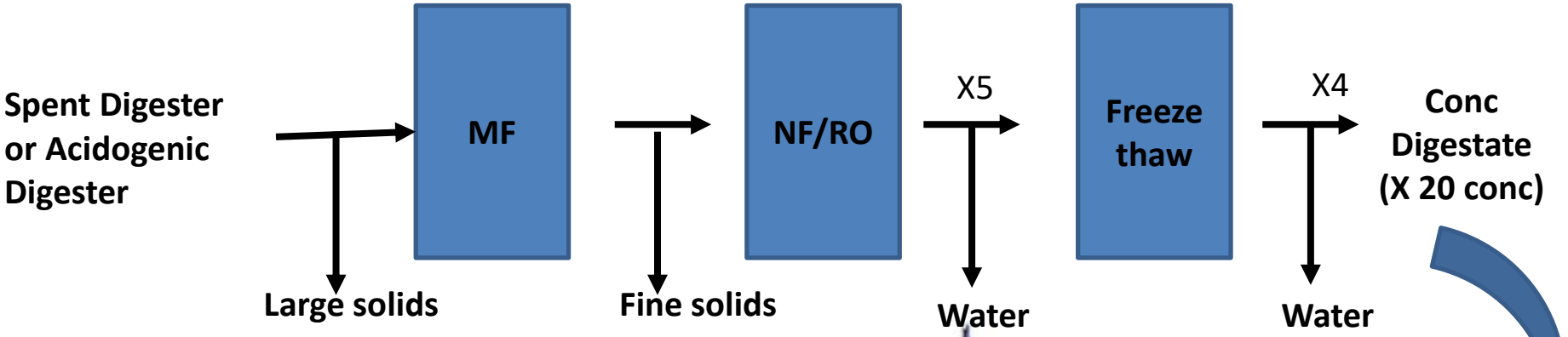
Preliminary work was funded by ADNet


Current situation
Slurry
Energy crops
Food waste
Anearobic Digester
Bio gas
CHP Unit
Electricity
Heat
Digestate storage
Digestate to land
Added value possibilities
Slurry
Energy crops
Food waste
Anearobic Digester
Bio gas
CHP Unit
Electricity
Heat
Reduced storage
Concentration
Digestate storage
Nutrient Formulation
Fertiliser Growth media
PHB
Protein
Fats/oil
Chemicals
Water
Digestate to land
Reduced transport and distribution costs

Bioreview (Newton Bharba)

AD Integration in to sugar biorefinery involving cellulose recovery, xylitol production nutrient water recovery

- Acidic digestion from Alcoholic fermentation waste
- Nutrient and fatty acid recovery
- Supply nutrient to xylitol fermentation of hemicellulose hydrolysates
- 1 M2 per day, with 950 litre water recovery + 50L concentrate
- 1 year operation at Fre Energy (nr Wrexham) before being moved to sugar refinery in India

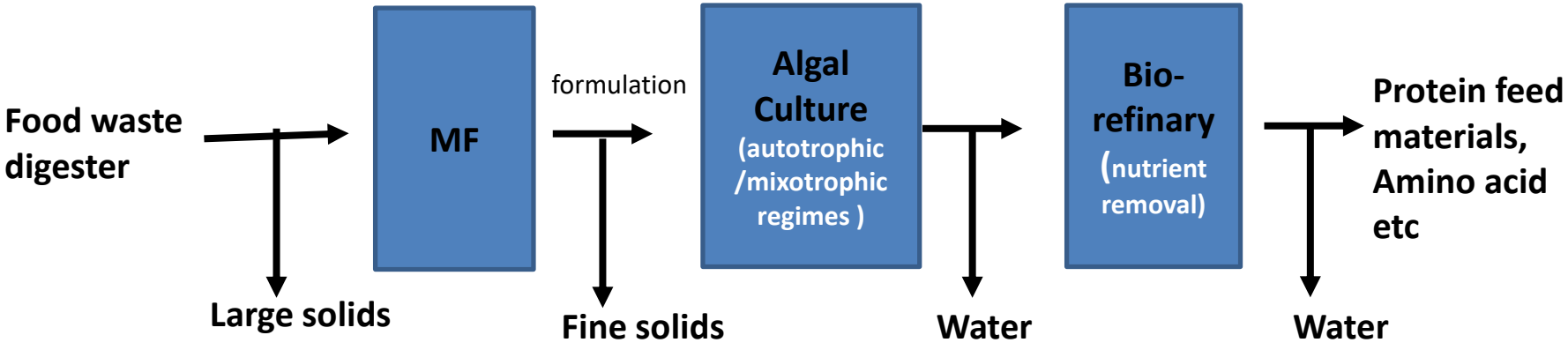


- Digest concentrate value £60 T
- Reduced storage costs
- Cost effective transport
- Facilitated product recovery
- Water recovery

Under construction !

Ad ALG (INTEREG)

- Project with France and Belgium
- Autotrophic and mixotrophic algae using digestate as a nutrient source
- UK: 5000 litre PBR system sited in a greenhouse at Langage farm in Devon
- Assessment of the process concept for N removal and protein production.



Currently, process being commissioned

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BBSRC
bioscience for the future

AD NETWORK
Harnessing Anaerobic Digestion

Newton-Bhabha Fund

Innovate UK

Interreg
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EUROPEAN UNION

THANK YOU !