

Secondary  
treatment

Sludge  
treatment

# Resources recovery from wastewater in a rapid changing world

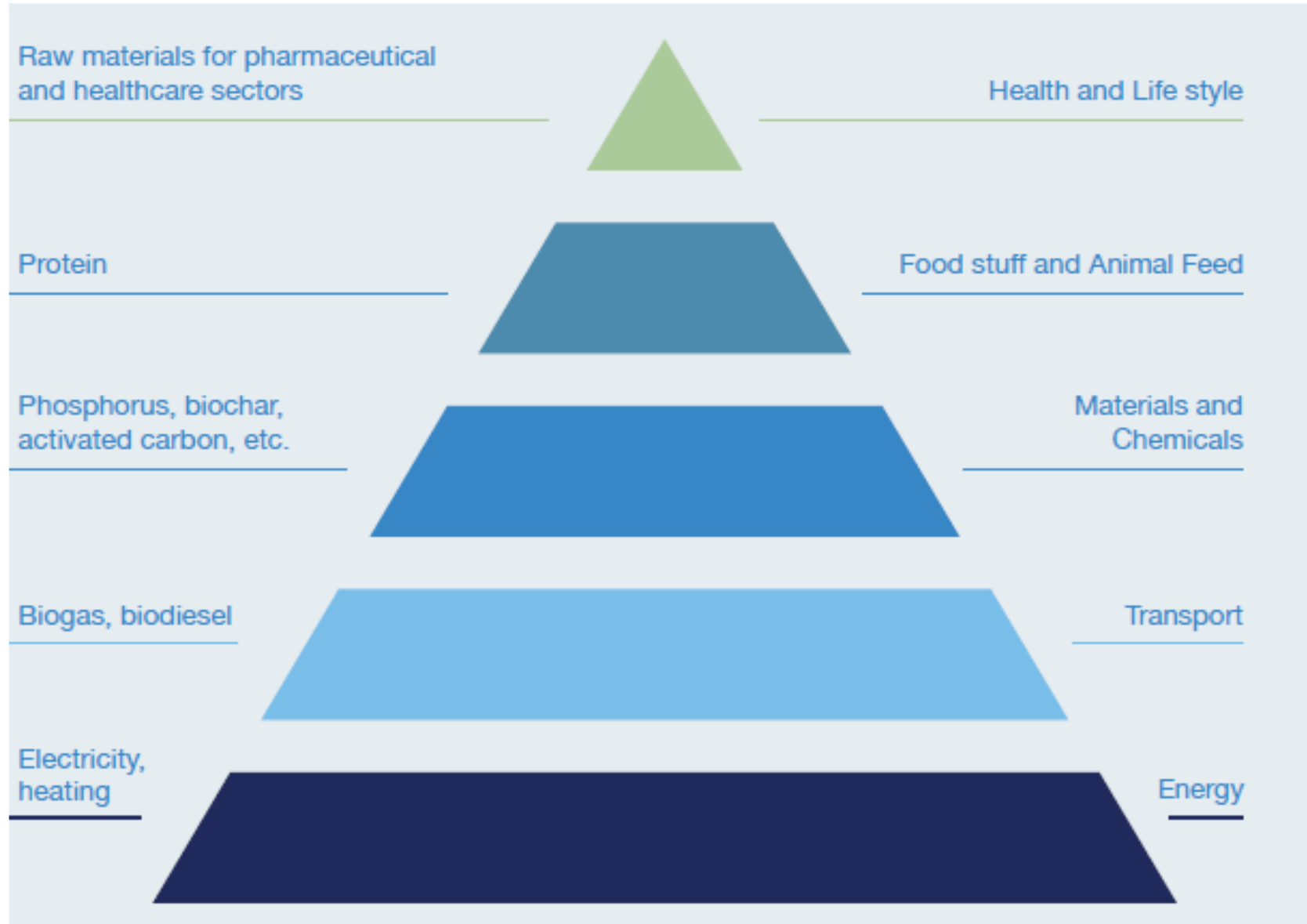
Primary  
treatment

Ressource  
recovery

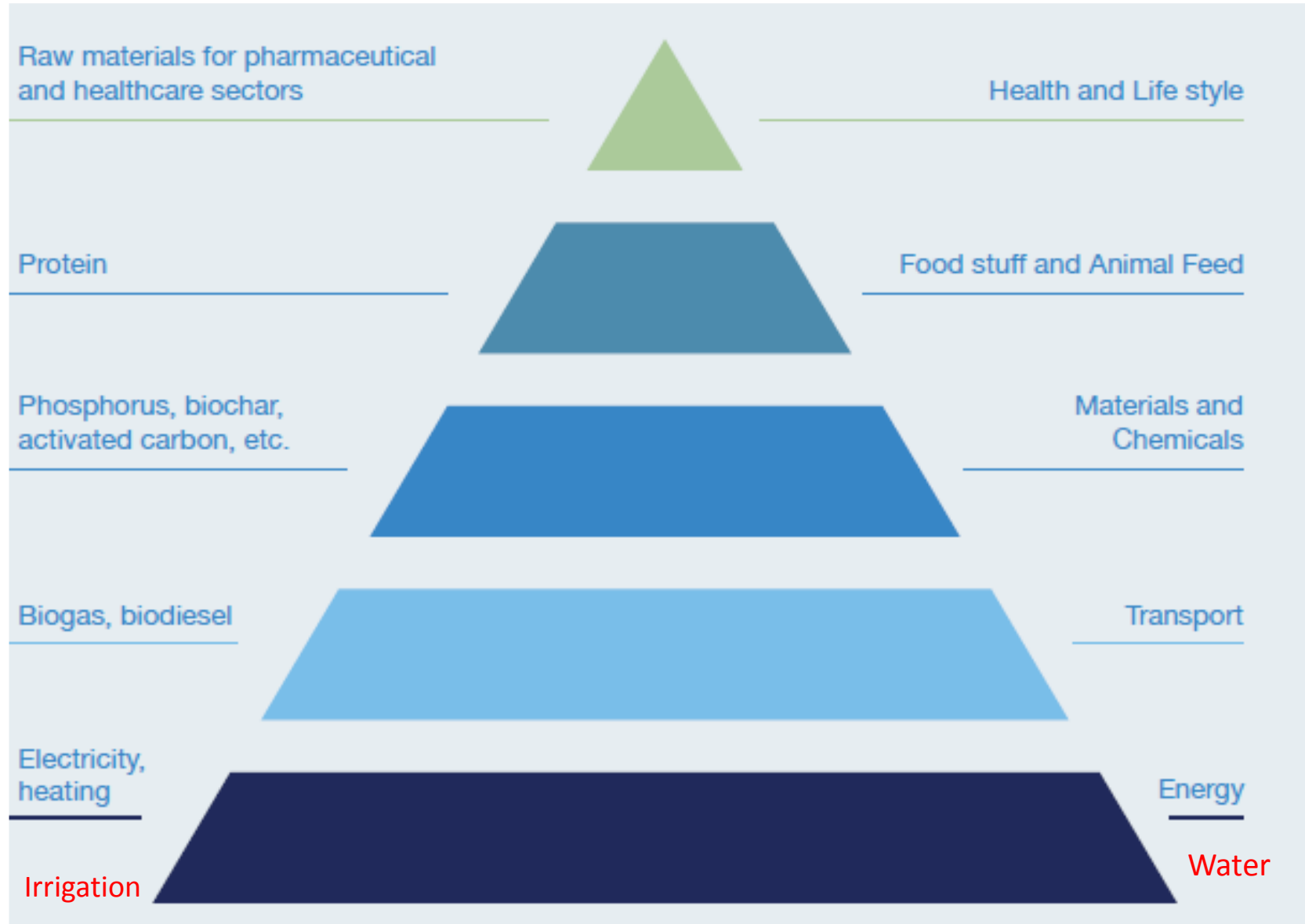
Professor Jes la Cour Jansen



# Snapshot of the volumes of resources in wastewater



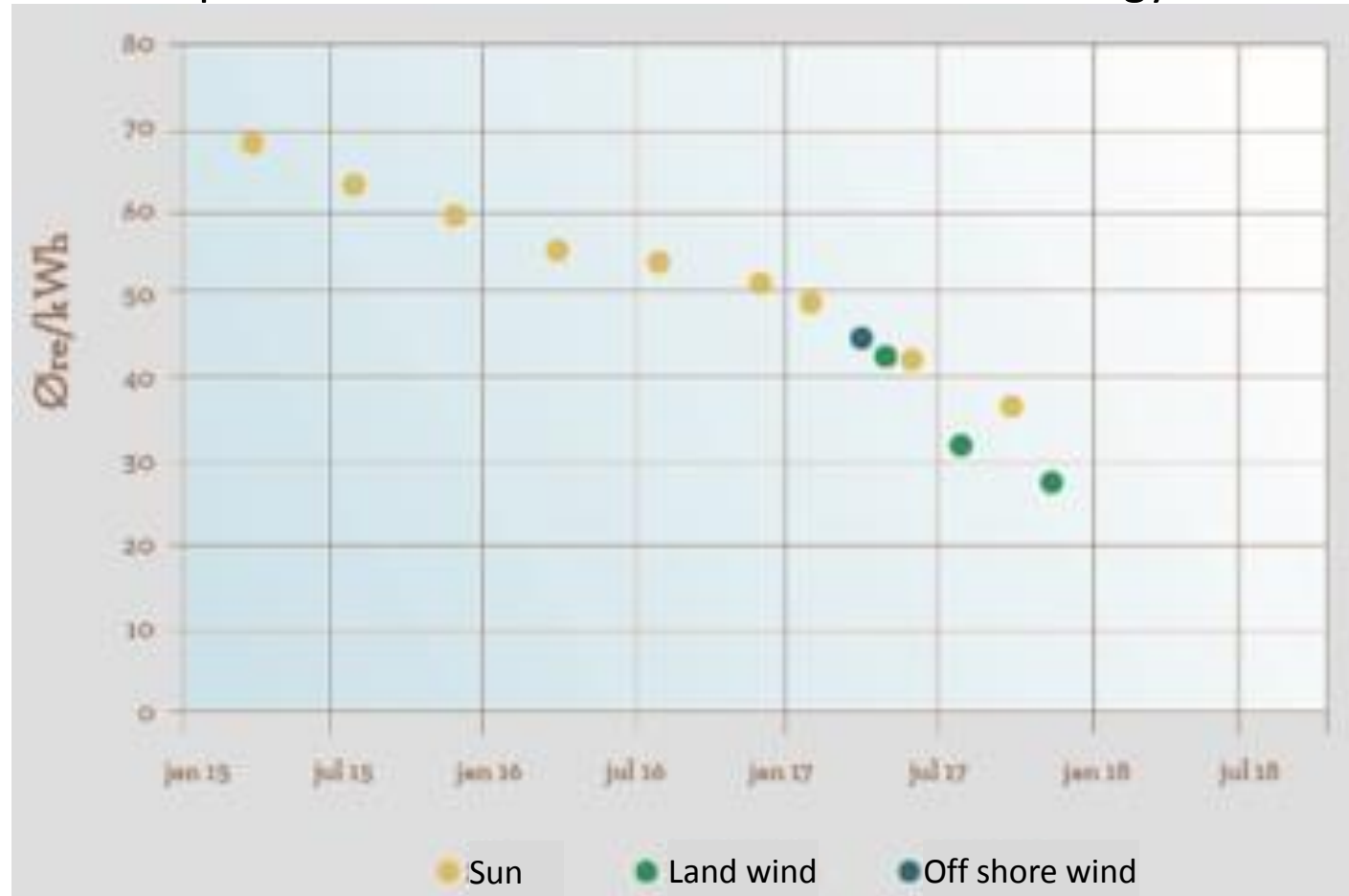
# Snapshot of the volumes of resources in wastewater



# Three reasons why resource efficiency is an ongoing process running with a significant speed

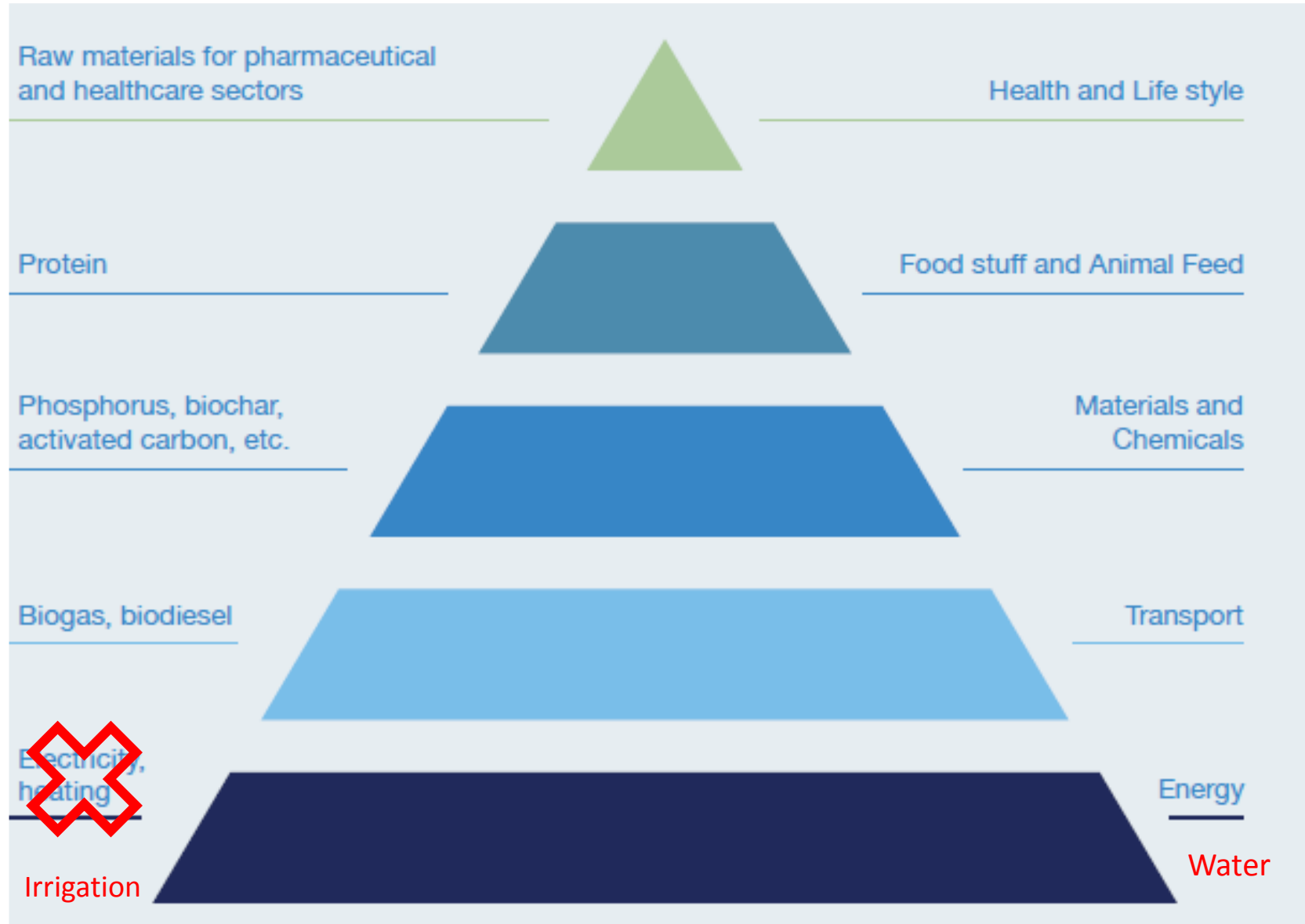
## 1) The resources of today have no value tomorrow

Cost development for installation of solar and wind energy in Germany



(Courtesy Dansk Energi)

# Snapshot of the volumes of resources in wastewater



Three reasons why resource efficiency is an ongoing process running with a significant speed

- 1) The resources of today have no value tomorrow
- 2) New treatment technology and discharge requirements change the resource base

Ozonation for reduction of pharmaceuticals will increase electricity consumption significant

Linköping ozonation plant



(Courtesy Tekniska Verken i Linköping AB)

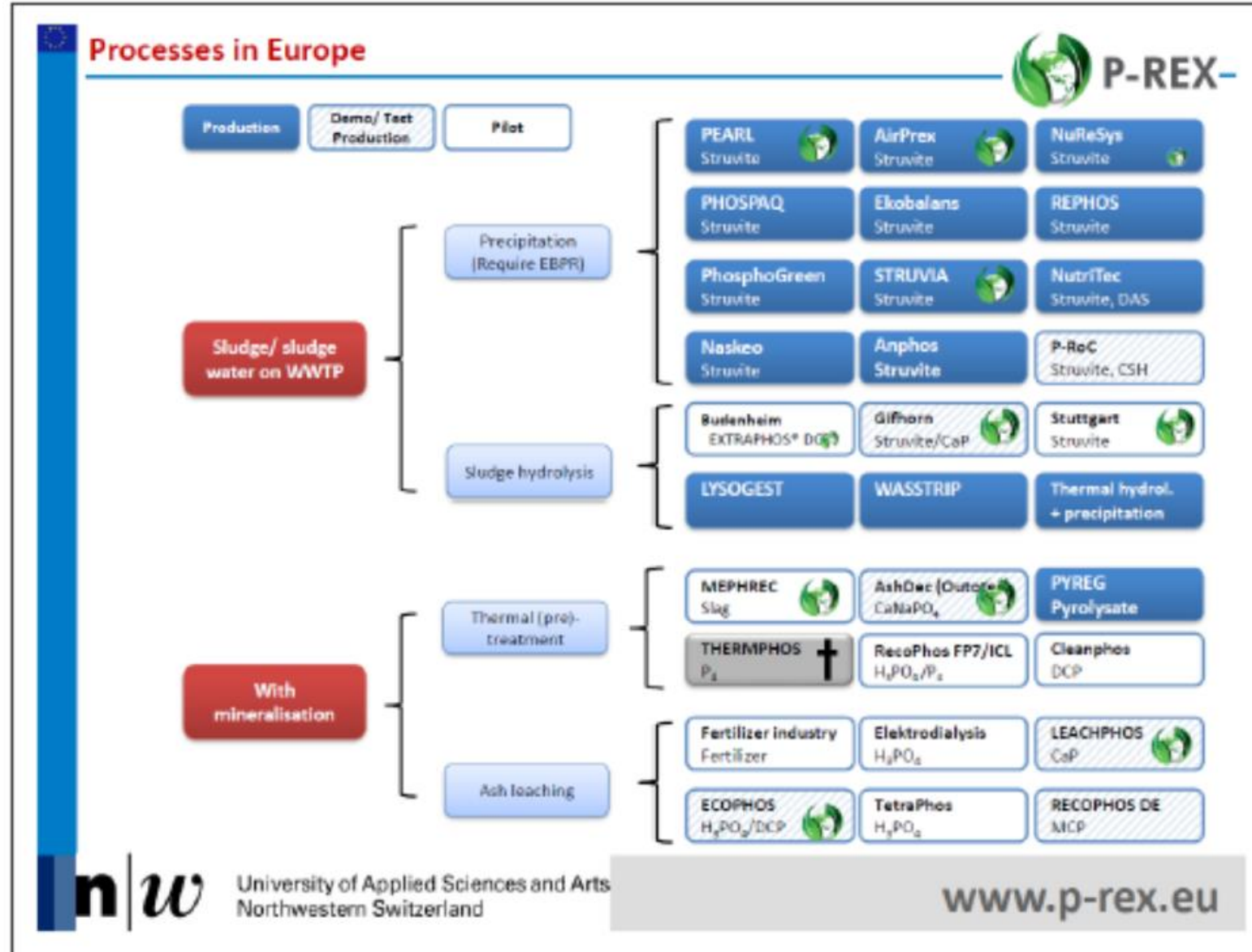
Extraction of materials and chemicals have a new resource base when sludge is banned on farmland



(Courtesy BIOFOS)



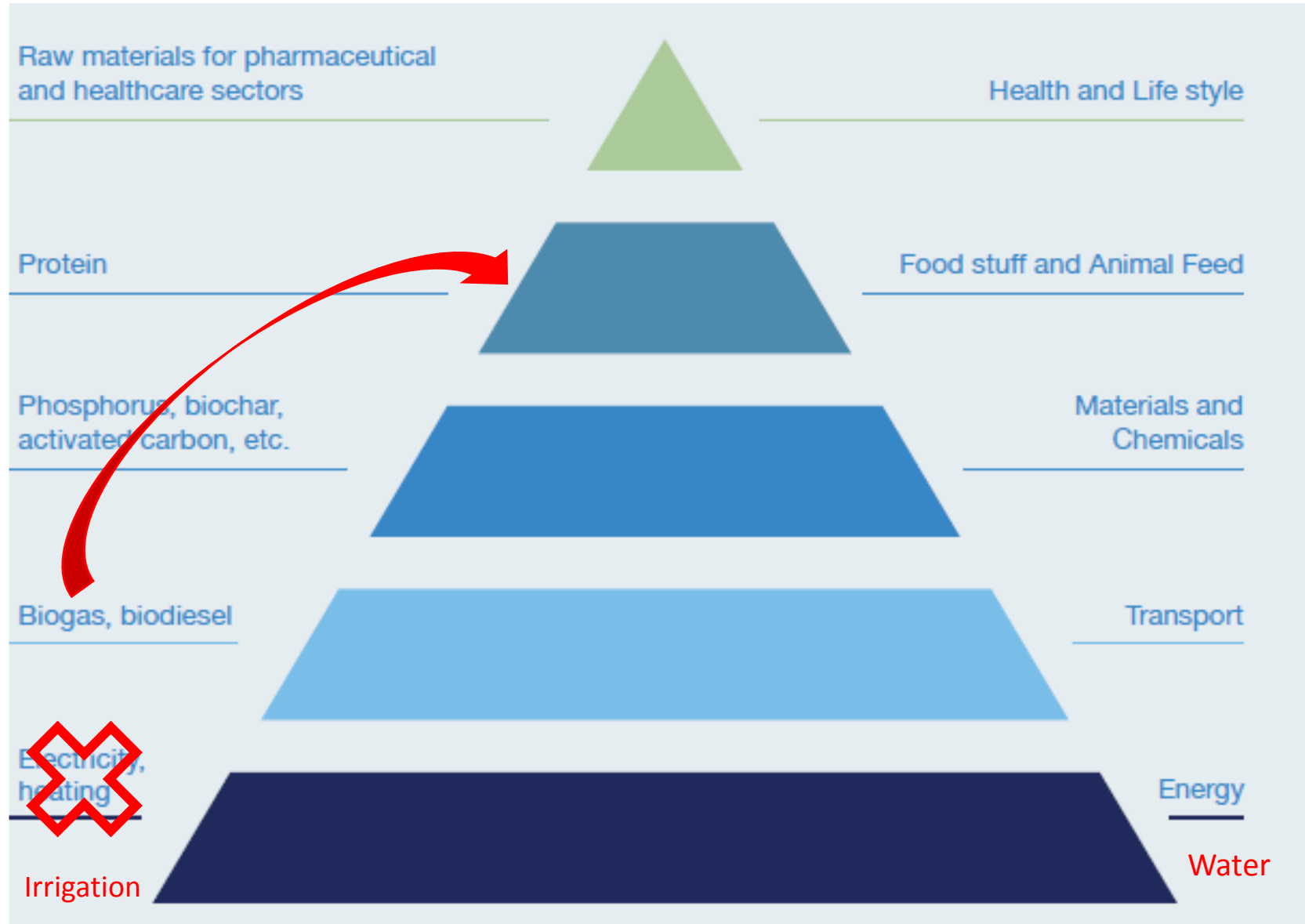
More than 30 new process ideas for extraction of P alone in Europe and many more to come



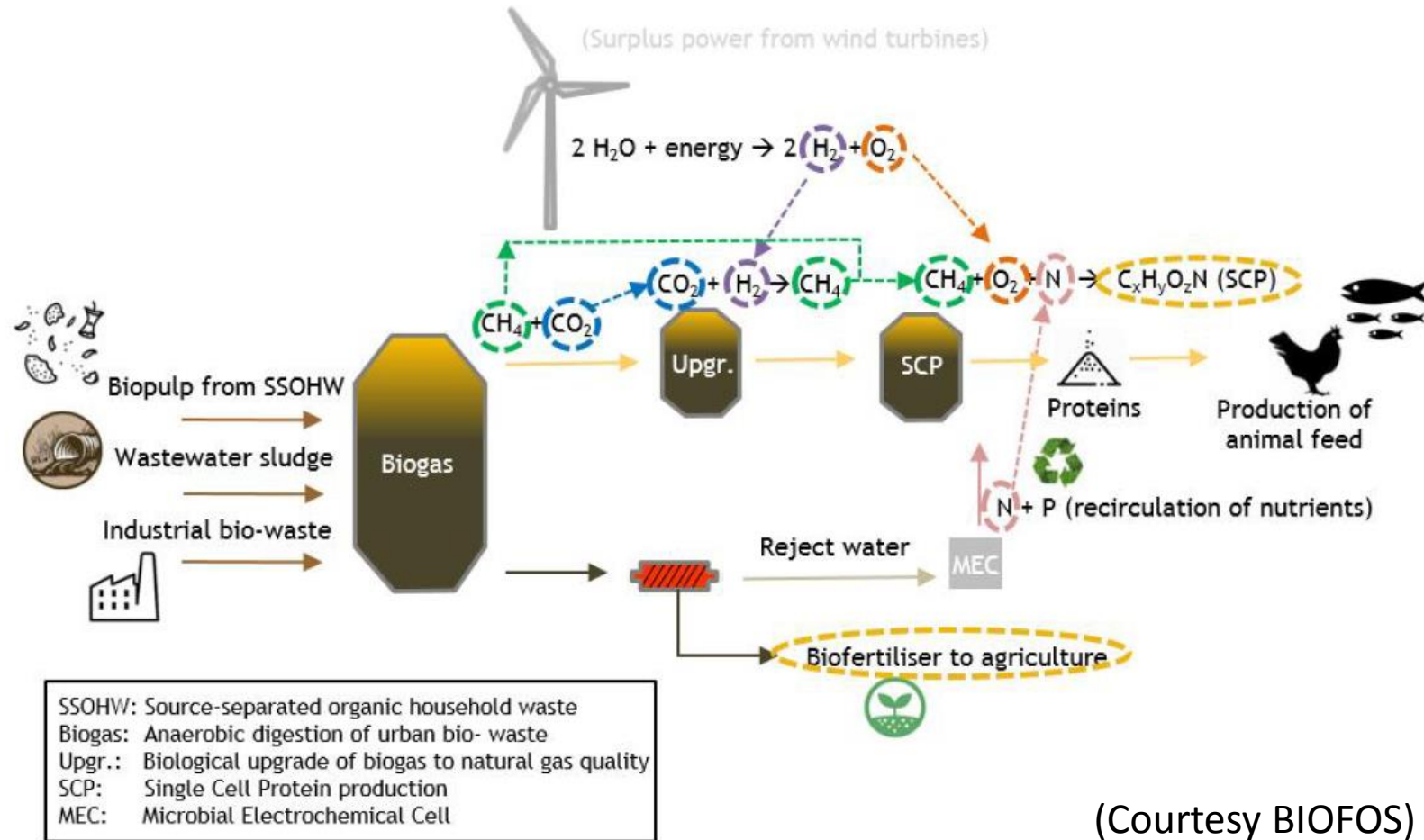
Three reasons why resource efficiency is an ongoing process running with a significant speed

- 1) The resources of today have no value tomorrow
- 2) New treatment technology and discharge requirements change the resource base
- 3) Technical developments enable other resources with a higher value to be produced

# Snapshot of the volumes of resources in wastewater



# Concept for upgrading of methane to proteins in the FUBAF project



(Courtesy BIOFOS)

# Summary

- Kill your darlings**
- Remember to treat the wastewater**
- Have resources in mind when changing processes**
- Look for resources everywhere**
- Test in partnerships**

