



SaltGae

algae to treat saline
wastewater

WP 7/9
Toolkit update

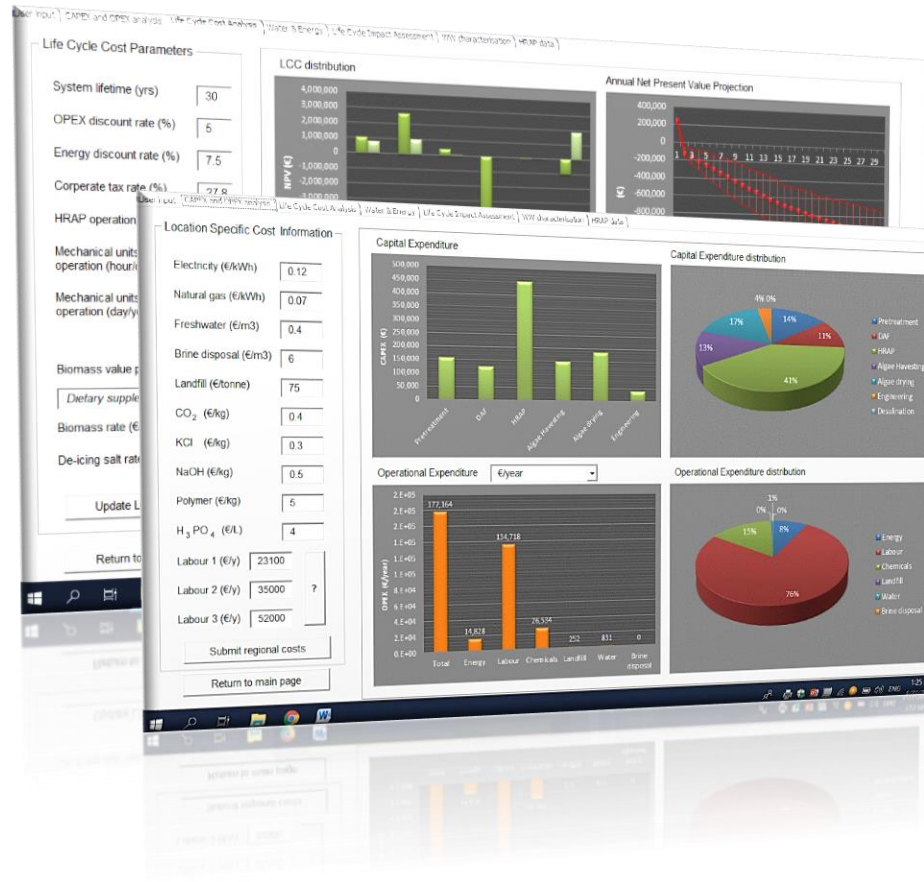
Greg McNamara
Project meeting
Ljubljana
24-25 Sep, 2019



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- Feasibility study results

SaltGae Visualisation tool update



SaltGae Visualisation Tool (SVT) update

- Salt valorisation removed from toolkit (V9)
- RISE have assessed that SaltGae salt production is not feasible for application as a de-icing agent due to ...
 - Environmental uncertainties
 - Some question over value/cost
- This has double effect of ...
 - Reducing revenue of Saltgae system
 - Incurring cost of solid salt disposal – is salt disposal even feasible for landfill? $500\text{m}^3/\text{d}$ at $30,000\text{ mg/l}$ = 15 tonne of salt per day!
- The RO energy has increased due to the reduction in ERD efficiency (from 98% to 70%)

Feasibility study

Project outline

- Feasibility study to ascertain whether or not a Dairy co-op could improve on their current WWTS
- Conducted system analysis of current system including ...
 - Energy audit
 - Inter sub-system sampling and water quality analysis
- Conducted
 - Life cycle cost analysis (LCCA) of current system
 - Carbon emissions accounting
- Conducted LCCA of SaltGae, UASB, and constructed wetlands under their site-specific conditions

Feasibility study

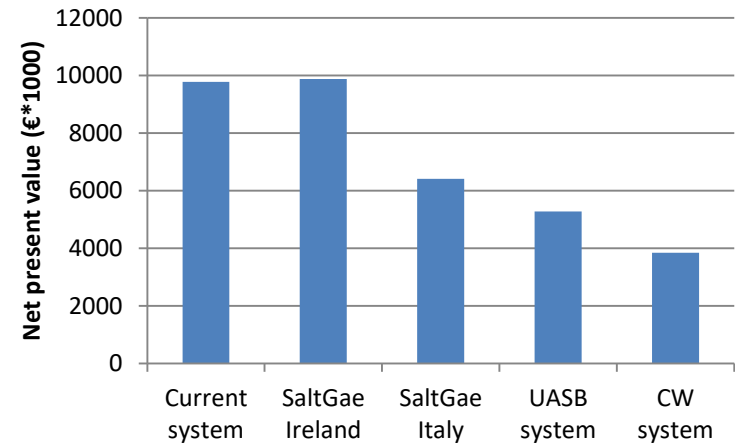
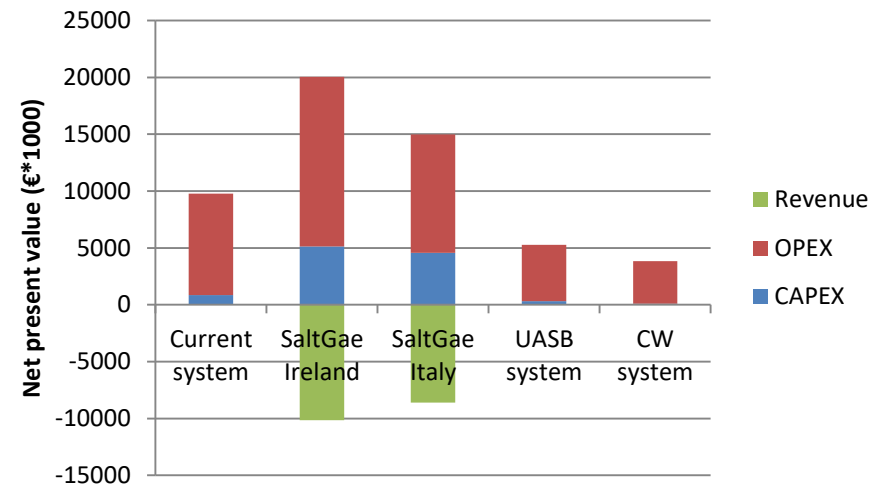
Site specific details

- Dairy processing company producing milk powder, whey protein, and butter
- Several effluent streams going to WWTS
- Flowrate of 1,600 m³/d
- COD of 2,000 mg/l
- Standard discharge limits for inland freshwater discharge
- Current system is achieving high quality effluent
- Current system is a hybrid conventional activated sludge (CAS) with trickling filter biotowers – old, and overly complexed
- The initial assumption was that the WW was of a similar quality to that of Archimede and could be used to produce a high value biomass – this was not the case!
- Upstream wash water contaminated with several chemicals and other pollutants were mixed with the ‘clean’ food based WW

Feasibility study

Results

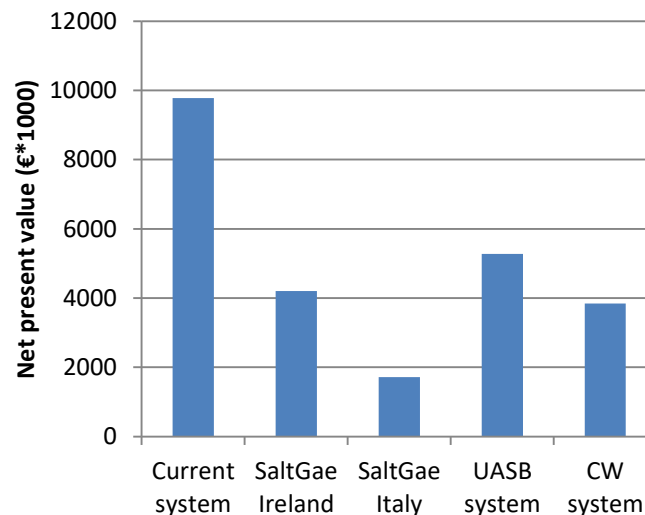
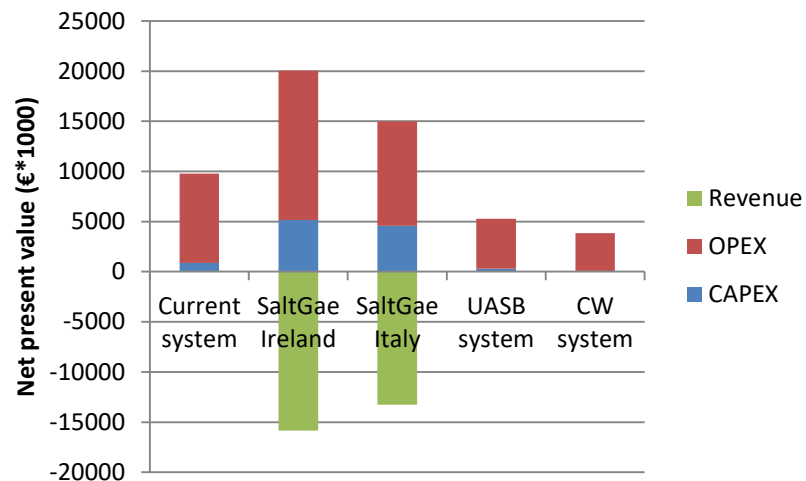
- Assessed the Saltgae system for Ireland and Italy
- At published bioplastics value of €1.5/kg



Feasibility study

Results

- However, at a biomass value of €3.5/kg biomass the Saltgae system is competitive with alternative systems



Feasibility study

Conclusions

- SaltGae system has real economic potential in warmer climates (stating the obvious!)
- Real need to determine the value criteria gradient of algae biomass with respect to pollutants