

# Transformational blueprint for a blue economy on UK terrestrial farms: integrating sustainable shrimp production in a changing agricultural landscape

Prof. Rod Wilson (Natural Science) & Prof. Ian Bateman OBE (Social Science)



£2.51 million project (3 years, 5<sup>th</sup> Sept 2022)



## Project Partners:

### Renewable Energy



### Aquaculture/Nutrition



THREE-SIXTY



### Seafood Retailers & Suppliers



LYONS SEAFOODS



### Scoping for UK Hatchery

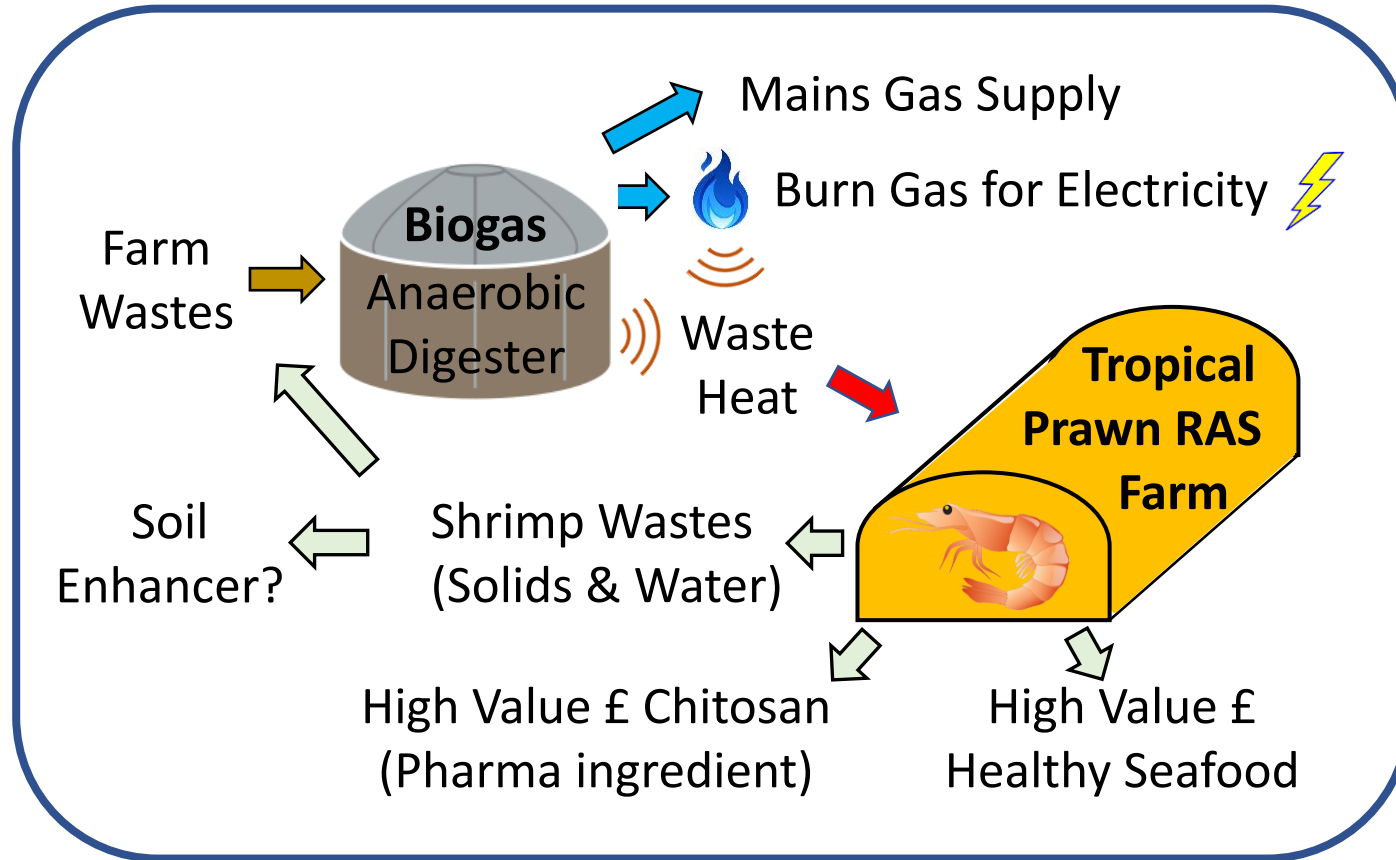


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AQUACULTURE

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Sainsbury's

LYONS SEAFOODS



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## WP1 - Two spatially explicit models:

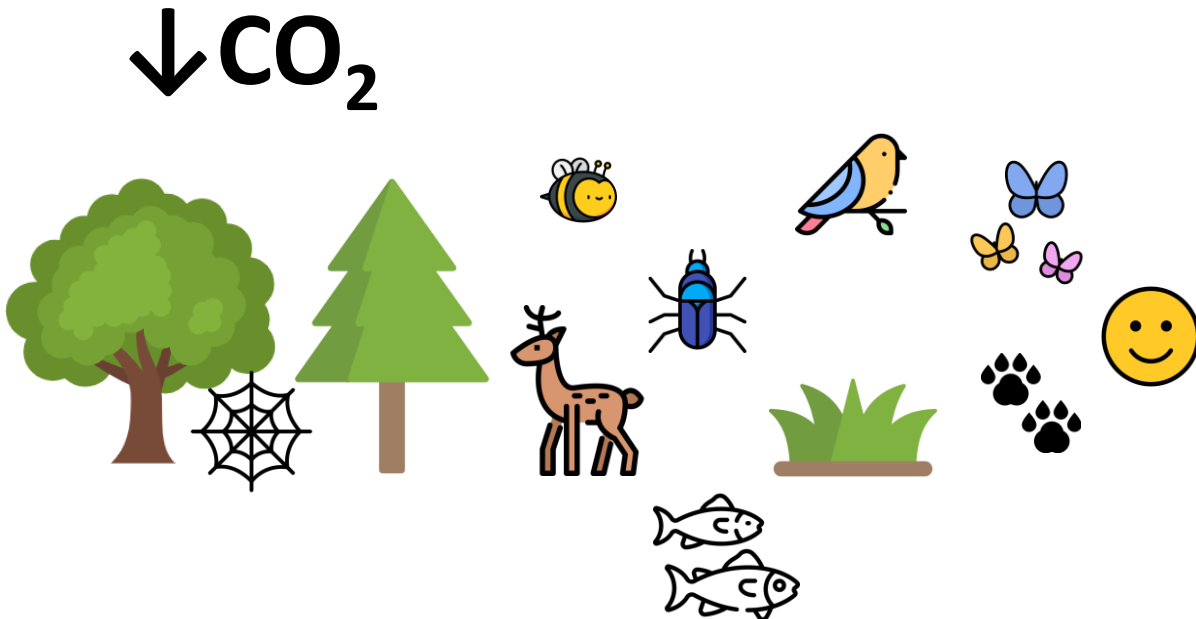
### 1) Economics of Shrimp RAS+Farm AD, & 2) Ecosystem Services value (public goods).

[Bateman, Gadanakis; PDRA 1/2]

[PPs - Sainsbury's and Lyons Seafoods]

#### WP1:

- Assess economic viability of terrestrial shrimp production in the UK.
- Quantify and economically value the **public goods** generated by this transformation.



New **Agriculture Act** commits to net zero & to enhance environmental stewardship, sustainability and support the production of **public goods**.

Public goods benefits of switch to shrimp:

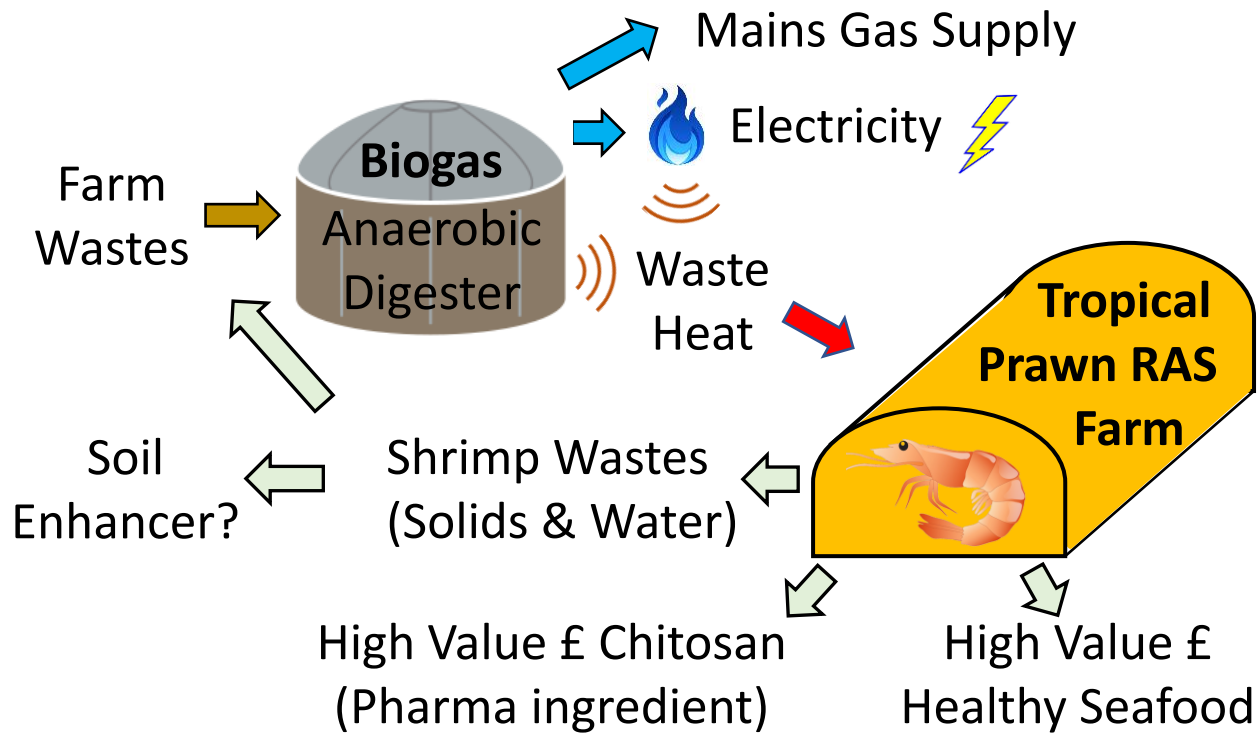
- ↓ GHG emissions,
- ↓ water pollution

Freeing land for:

**Reforestation, Biodiversity, Recreation.**

Co-locating shrimp farms with UK farm AD will:

- maximise waste heat energy (>**circularity**)
- boost farm-based renewable energy sector (UK emissions targets).



**WP2 - Optimise RAS environment & diet for shrimp production, nutrition quality, chitosan yield; chemical sensors development (e.g.  $\text{Ca}^{2+}$ )**

[Wilson, Ellis, Perry, Allen, Smirnoff; PDRA 3/4]

[PPs – Rastech, FloGro, 360 Aqua, Cargill, GW4 Env. Sensors Group]

**WP4 - Create scoping team, Business Case & financial model for future UK hatchery**

[Russell, Wilson, Ellis; Business Fellow]:

[PPs - Cefas, Ocean Conservation Trust, PML Applications, Sainsbury's, Lyons Seafoods]

**WP3: Proof-of-concept for co-locating shrimp RAS + Farm AD renewable energy & circularity of waste**

[Wilson, Buckling, Blackwell\*; ResCo-I Sierocinski; PDRA 5]

[PPs - Ixora Energy, Rastech]

\*Rothamsted Research



# 4<sup>th</sup> International Symposium on Advances in Marine Mussel Research

November 21<sup>st</sup> to 23<sup>rd</sup> 2022

Saunton Sands Hotel, North Devon, UK

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