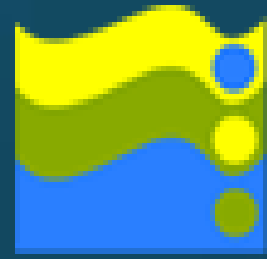


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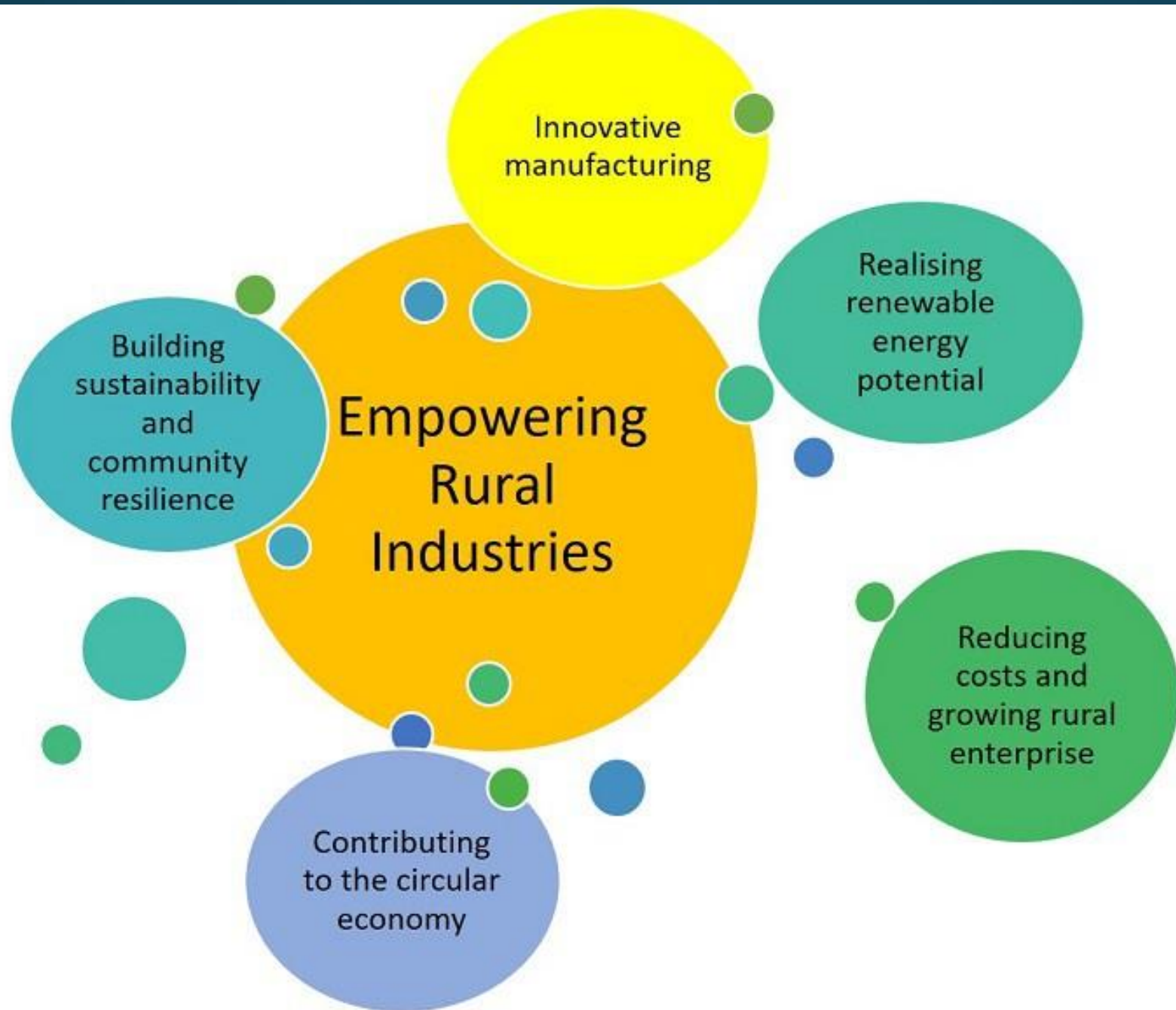
ALGAL SOLUTIONS

For Local Energy Economy

Ron Livingstone

# Business model

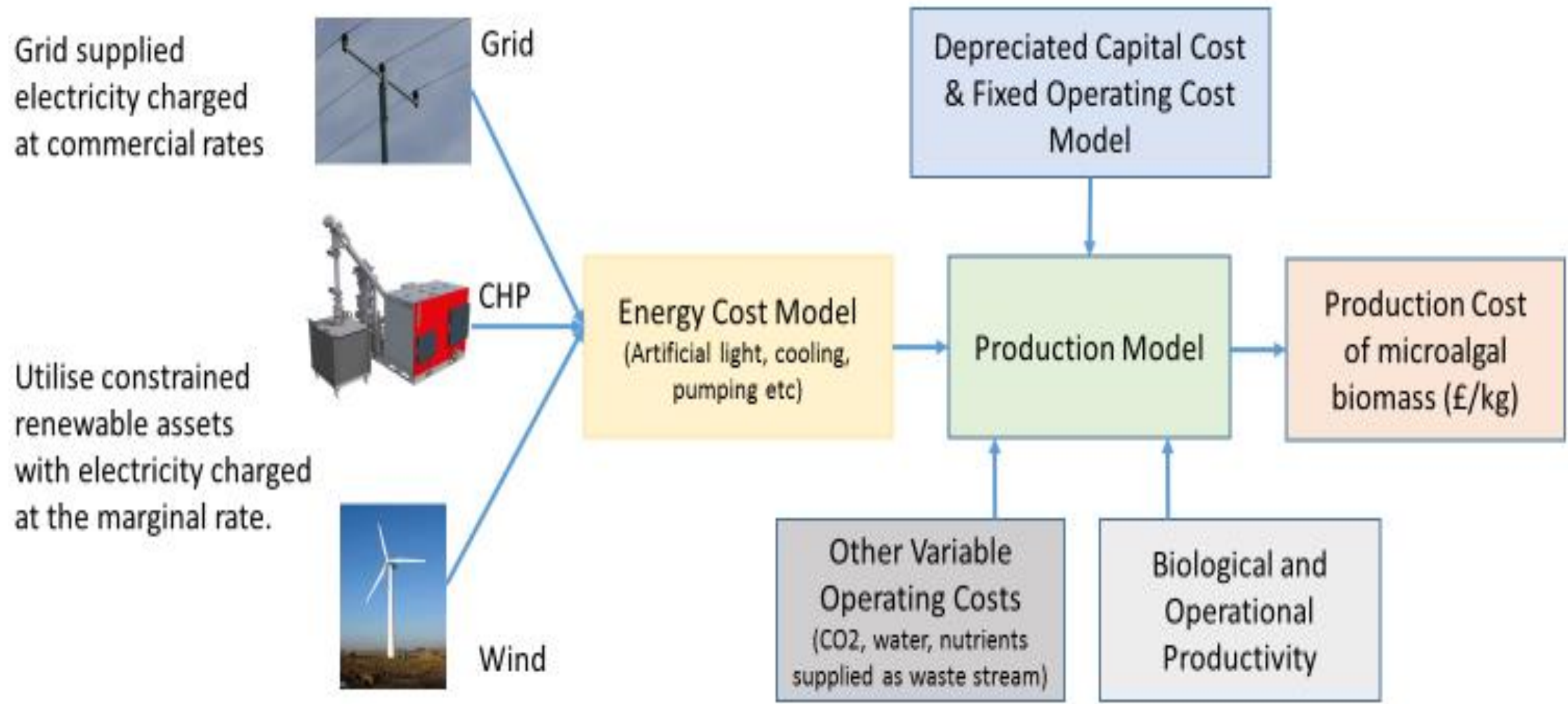
1. The business proposition
2. Costs
3. Revenue and ROCE
4. Interim conclusions and next steps



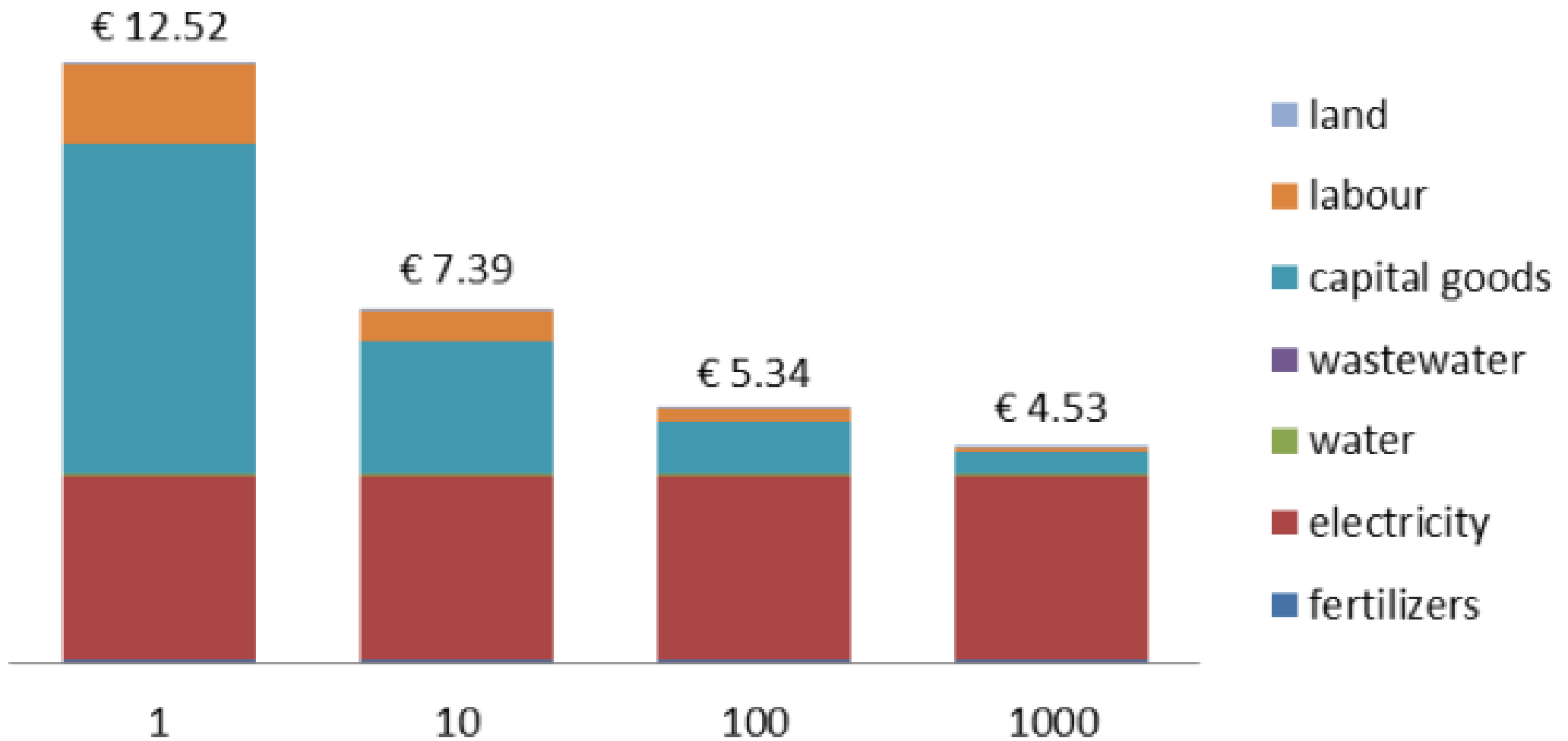
The business proposition revolves around six key elements:

1. Choice of technology
2. Use of renewables
3. Circular economy model
4. Impact of scaling up
5. Quality and consistency
6. Opportunities for remote and rural communities

# Basis of Microalgae Cost Model


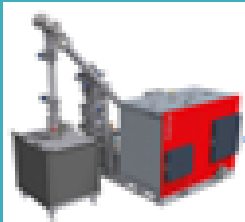



# up scaling effect on cost price

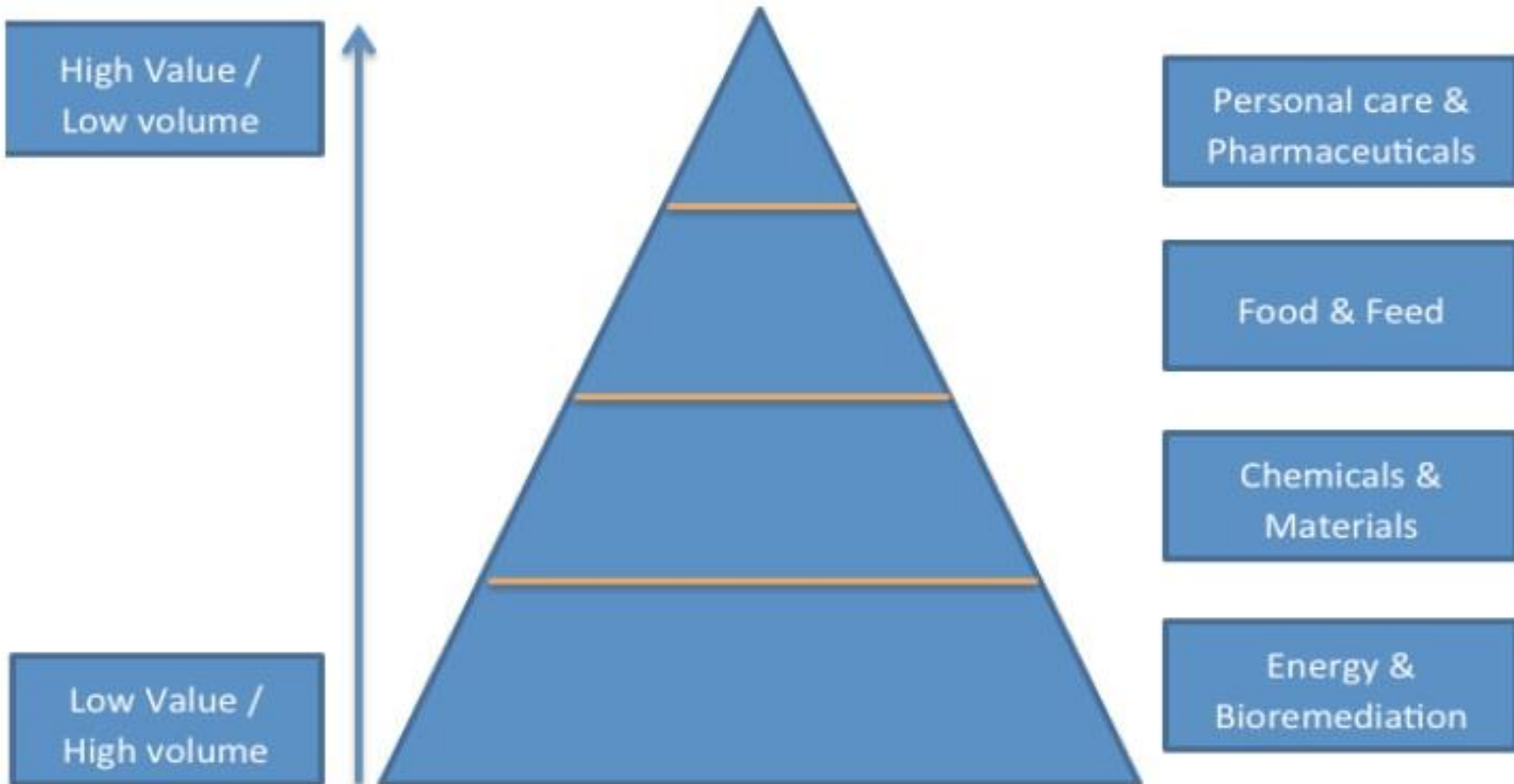


Source: Spruijt et al. (2015)

# Three case studies – cost modelling

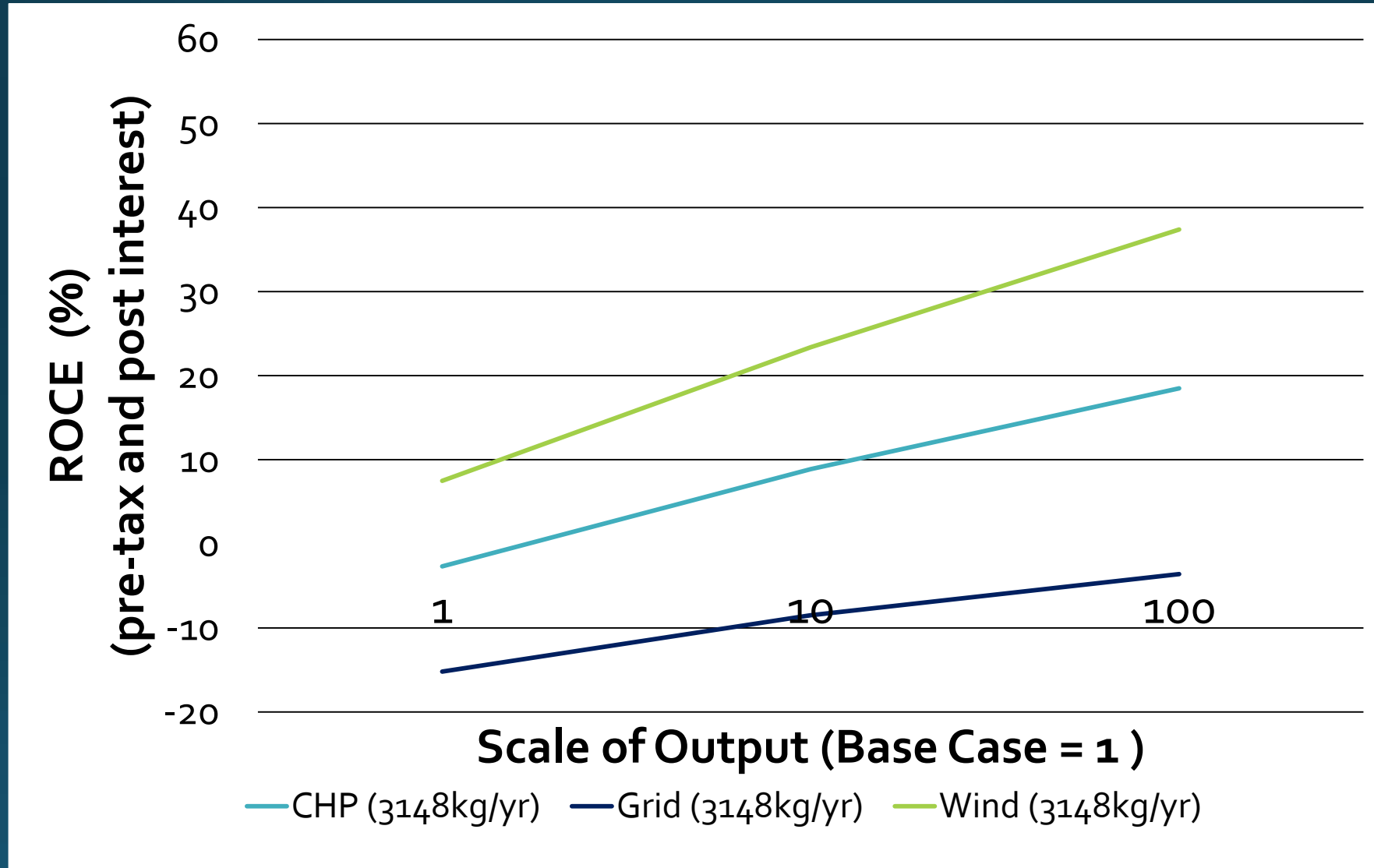
Scale	Grid 	CHP 	Wind 
1	£63.10/kg	£46.60/kg	£ 31/kg
10	£49.80/kg	£33.90/kg	£ 18.40/kg
100	£43.50/kg	£27.60/kg	£12.10/kg

# Revenue

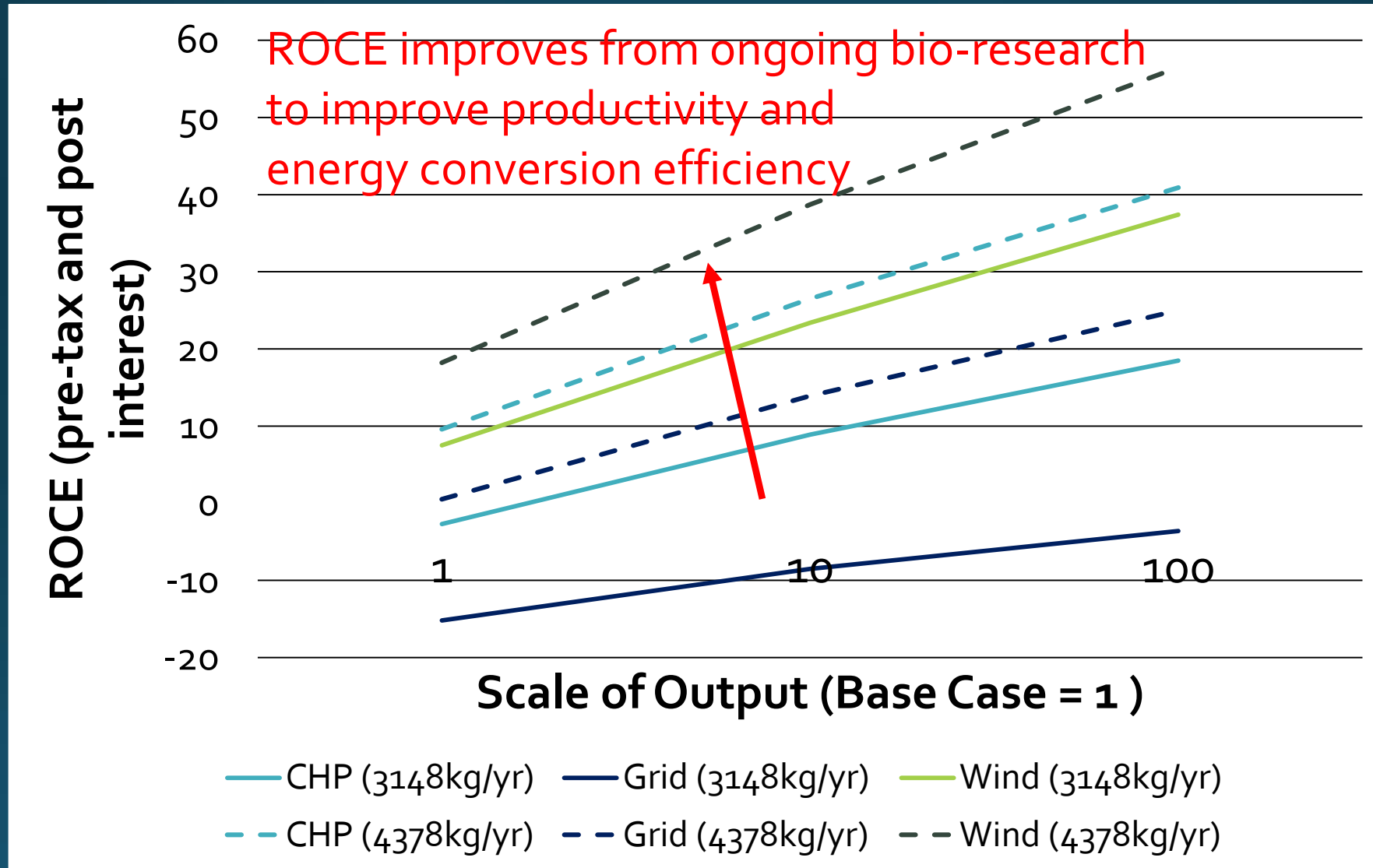




# Relationship between energy supply, scale of production and ROCE for microalgae production



# Relationship between energy supply, scale of production and ROCE for microalgae production



# Example case study : the exciting potential with constrained renewables

- Constrained energy on Orkney (11.7GWh)
- This translates into manufacturing 39te of algal biomass
- Market value of around £2.7m (based on Xanthella's latest productivity figures).
- Constrained energy would have generated an export tariff payment of around £670k.

• £0 ↔ £670k ↔ £2.7m

- Bring high value bio-technology business to the source of generation
- Increase GVA beyond that from simply generating and exporting surplus energy to the mainland (grid constrained – potential not there anyway).
- In this example case, it adds a further £2m of GVA to the economy.
- Other additional socio-economic benefits / circular economy maximisation.

# Interim conclusion : 4 key findings to date

1. A business model has been developed and key parameters and variables set out.
2. There is a viable business proposition and all key factors are well within acceptable ranges.
3. Research to date indicates strong potential and increasing returns from scaling the business up
4. Research to date indicates that there is also a viable business proposition based around repeatability of smaller scale business units, replicated across geographical areas.

# Next steps

1. From bench to demonstrator (Ardnamurchan)
2. Further develop economic modelling
3. Further develop business model – circular economy
4. Wider socio-economic benefits (Construction jobs; Technician and process operator positions; extends supply chain; helps rejuvenate rural communities).

# Contacts

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