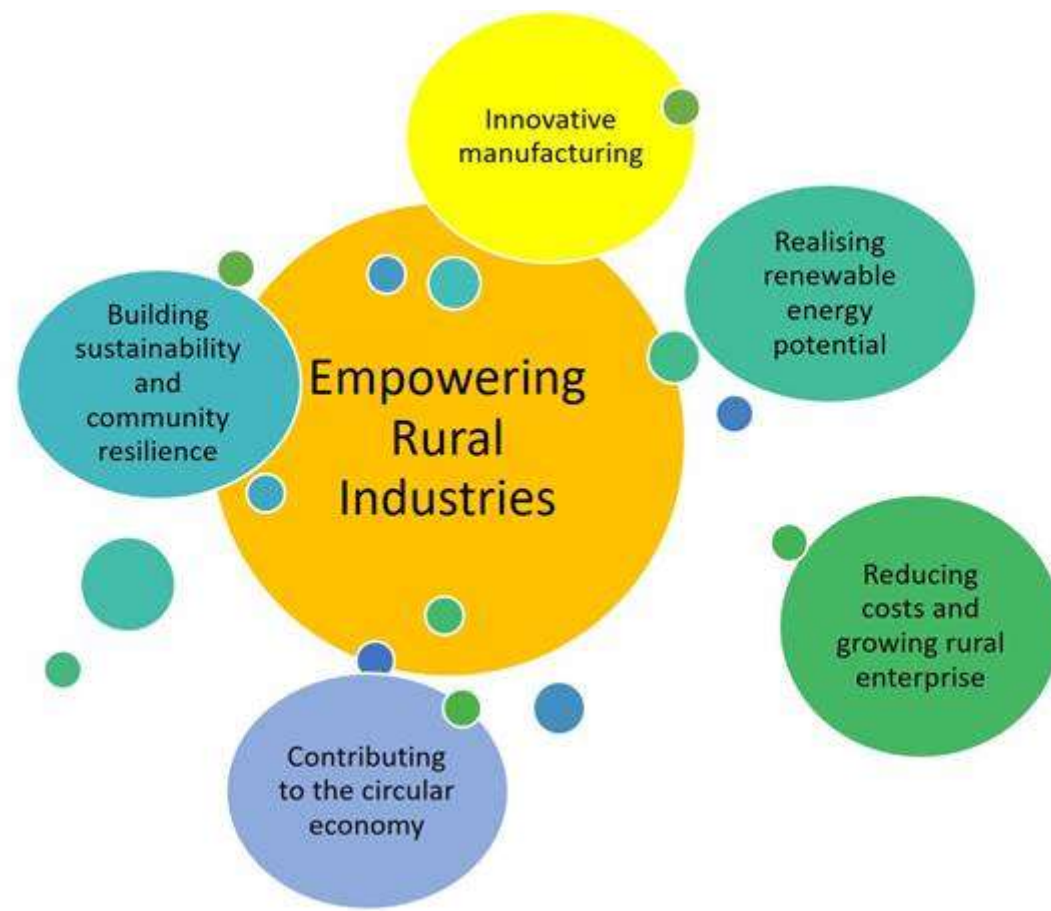
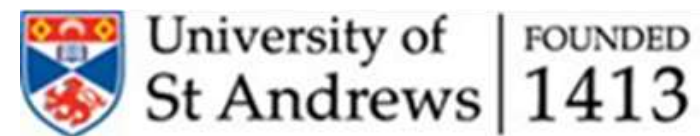




# Eden Campus

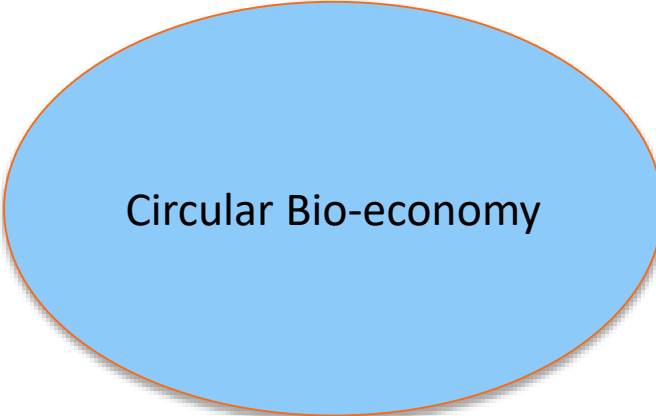


# Eden Campus


## Empowering Rural Innovation



Novel Materials  
Novel Manufacturing

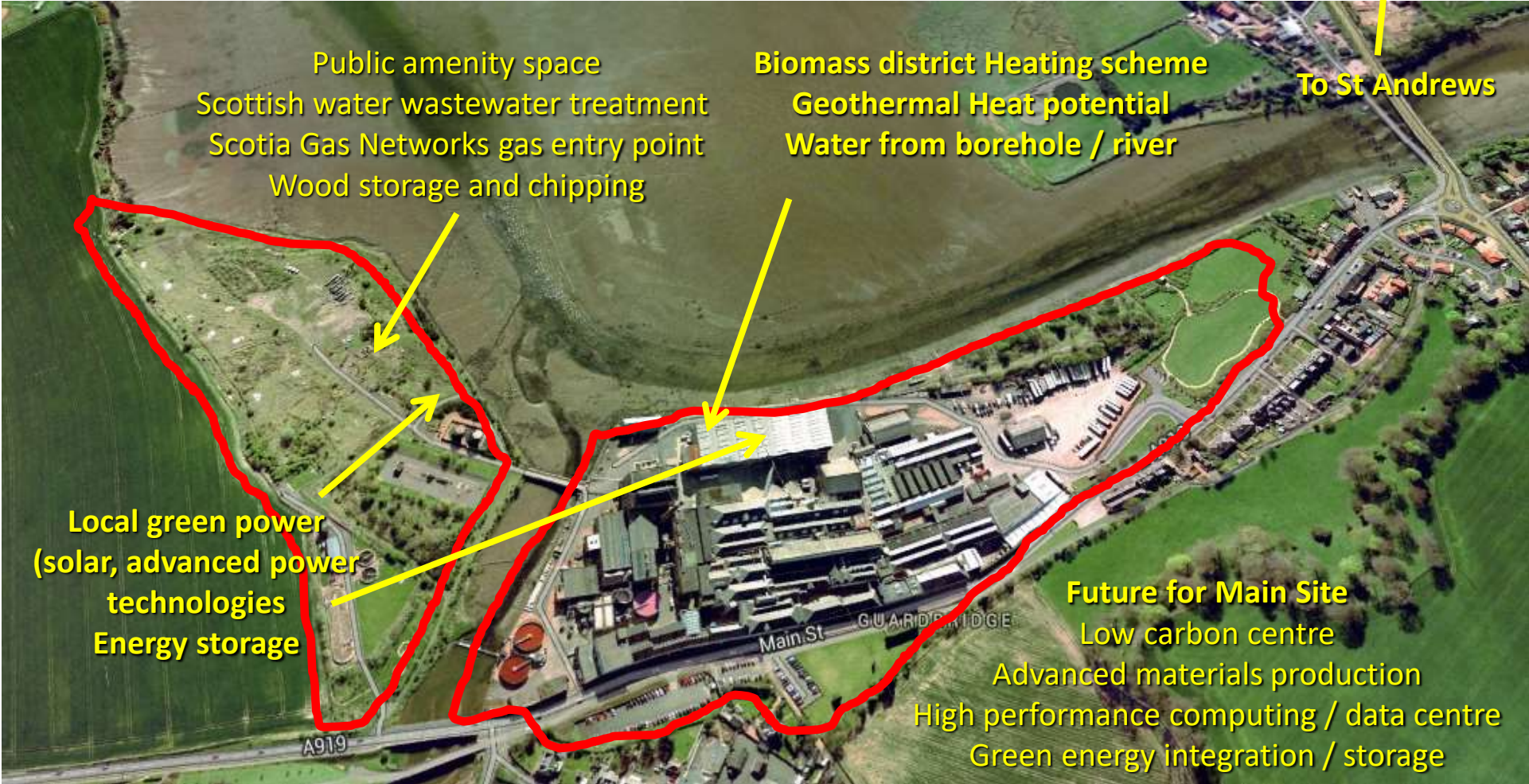


Circular Bio-economy



Zero Carbon Energy  
Communities

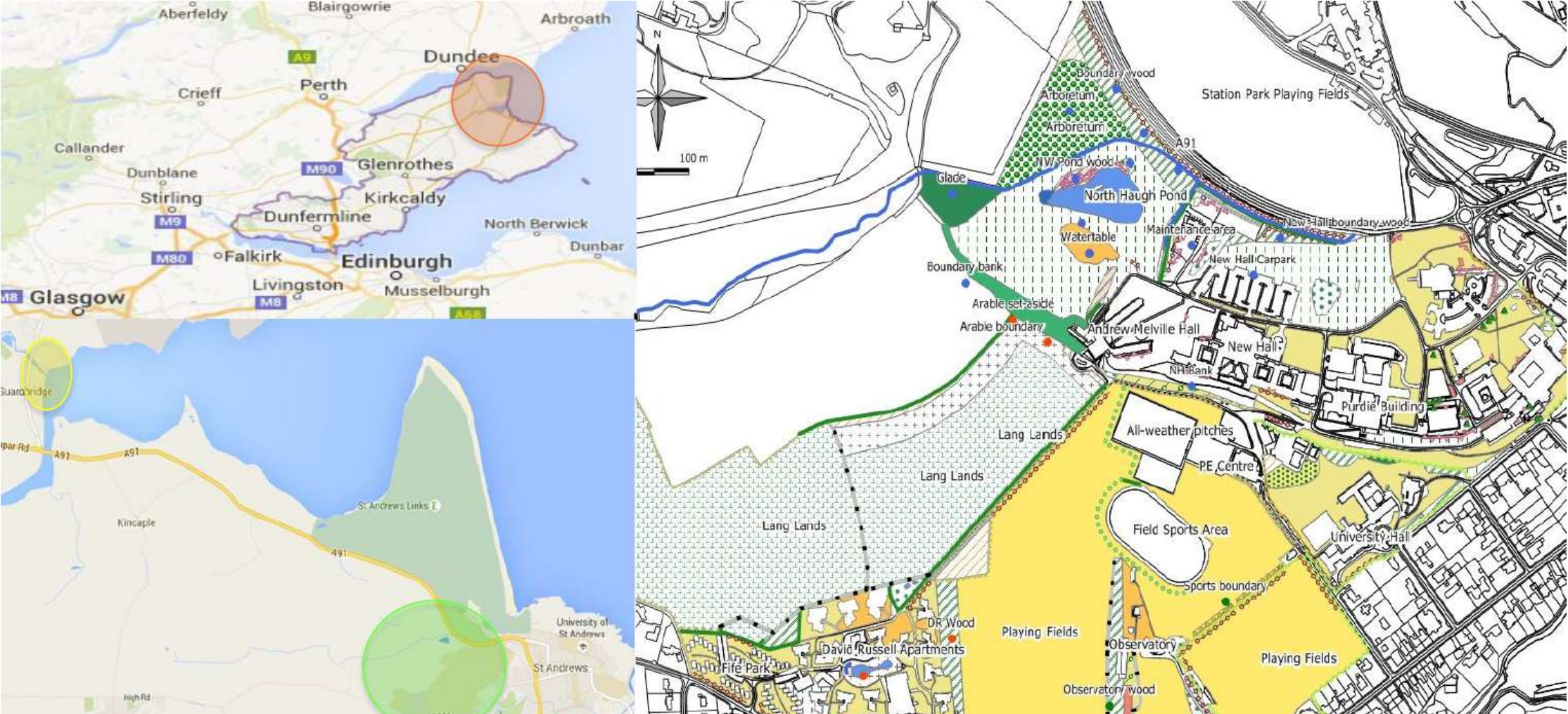
# Eden Campus: Aerial View



# Eden Campus: Empowering Rural Industry

- Integrated “whole systems approach” to community energy
- Adding in Industrial scale emission carbon capture to local products
- Zero carbon energy community
  
- Circular bio-economy activities
- Use of local “less economic” resources
- Novel advance materials and novel manufacturing
  
- Repeatable model
- Rural, urban, islands, nationally+ internationally
- Strengthened Scottish Supply chain and local industry

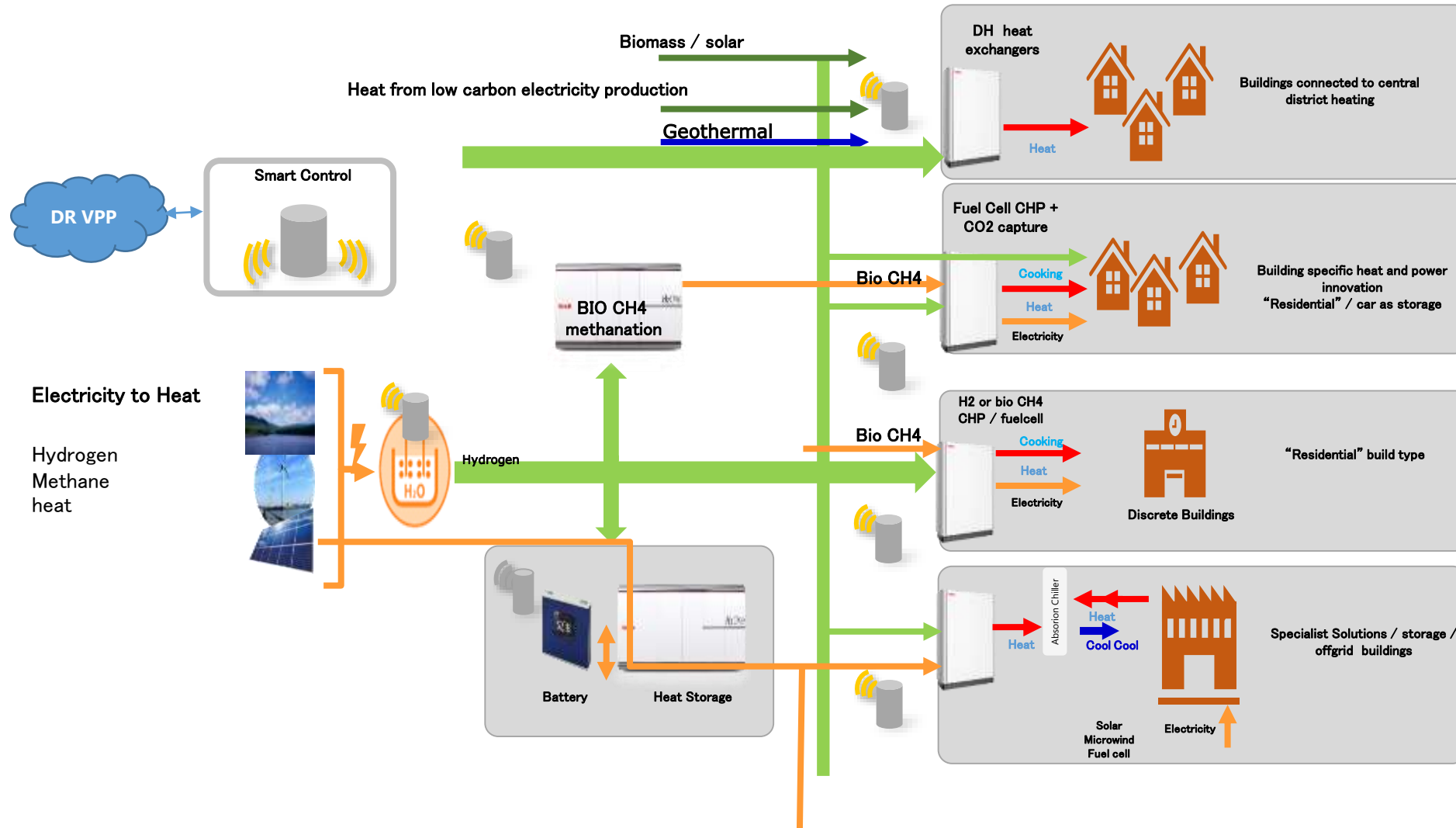
# 6.5MW Wood District Heating Scheme



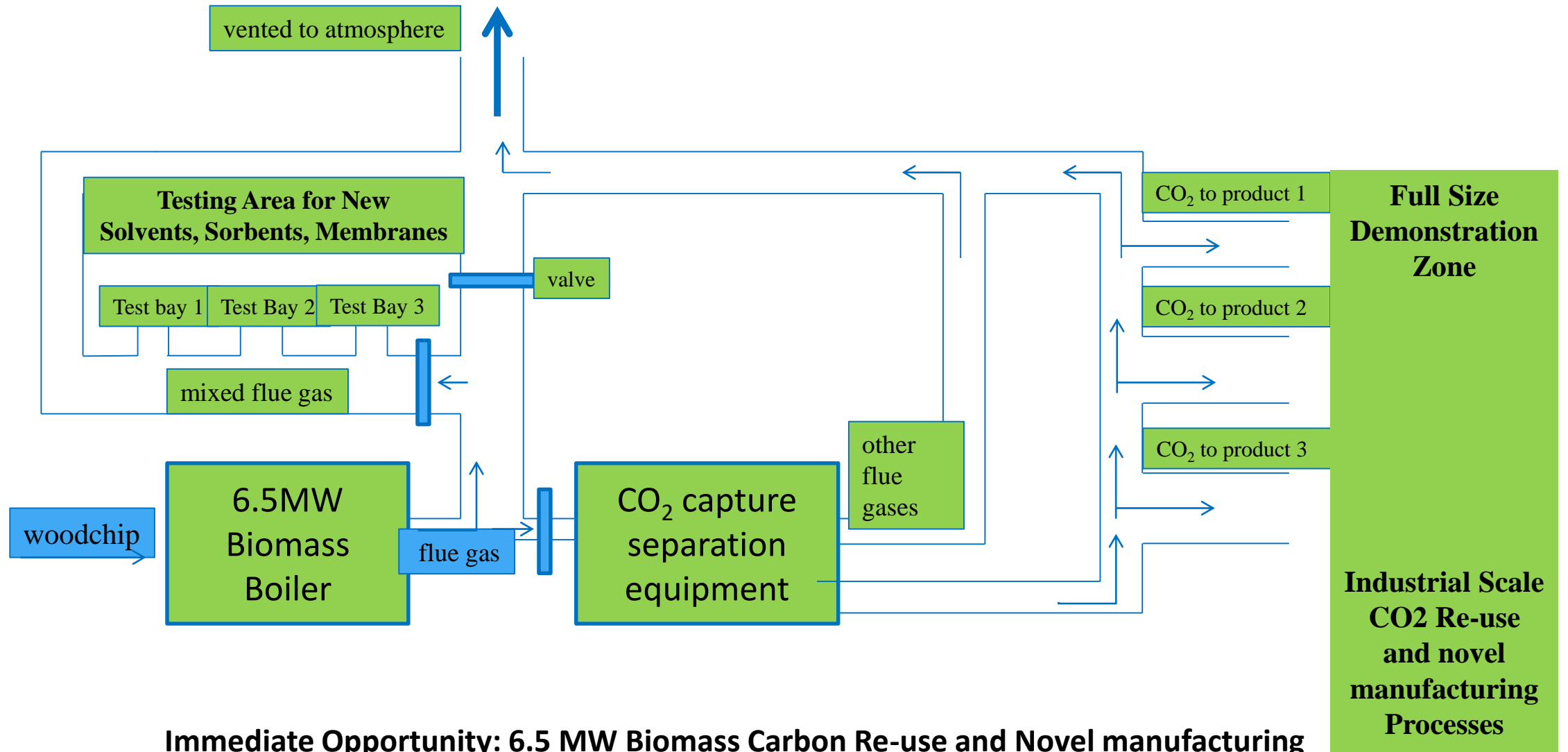
# 6.5MW Wood District Heating Scheme



# Smart Multi- Scenarios Community Heat



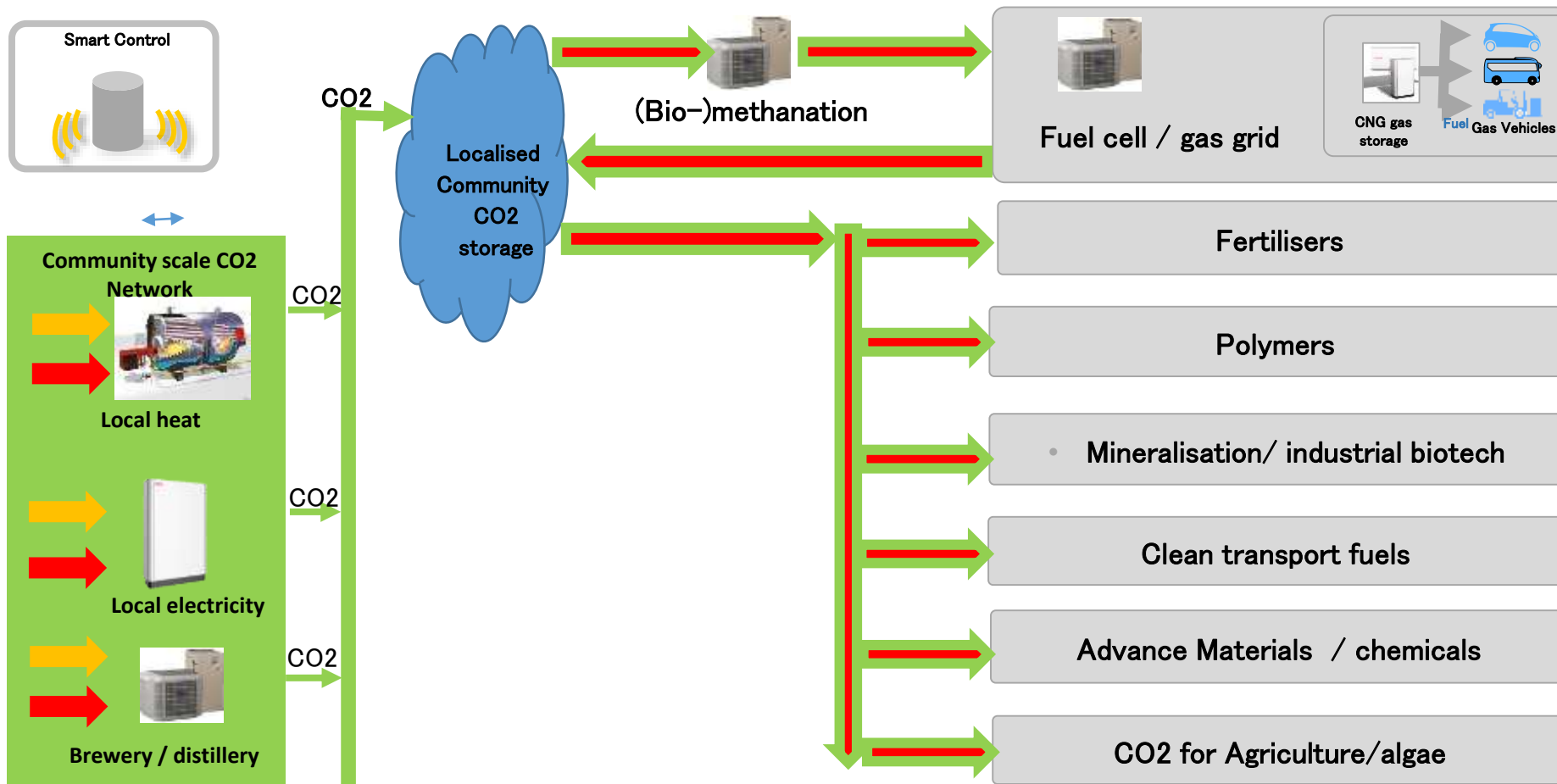
# Community Carbon Capture to Bio-products



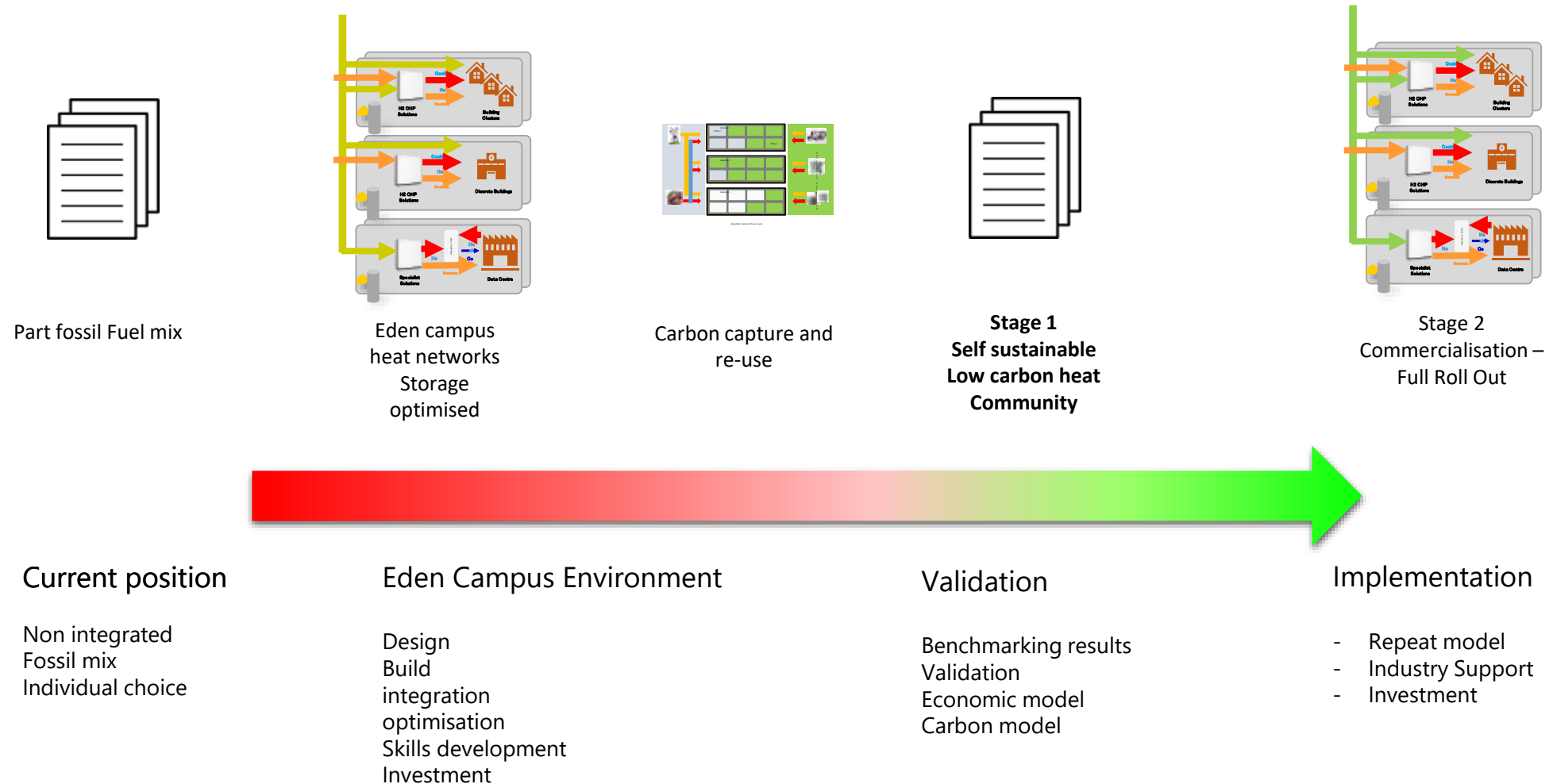
**Immediate Opportunity: 6.5 MW Biomass Carbon Re-use and Novel manufacturing**



# Strengthening Rural Industry: Local Circular Bio-economy: CO2 reduction, Novel Manufacturing and Novel Materials



# Eden Campus: Zero Carbon Heat Community



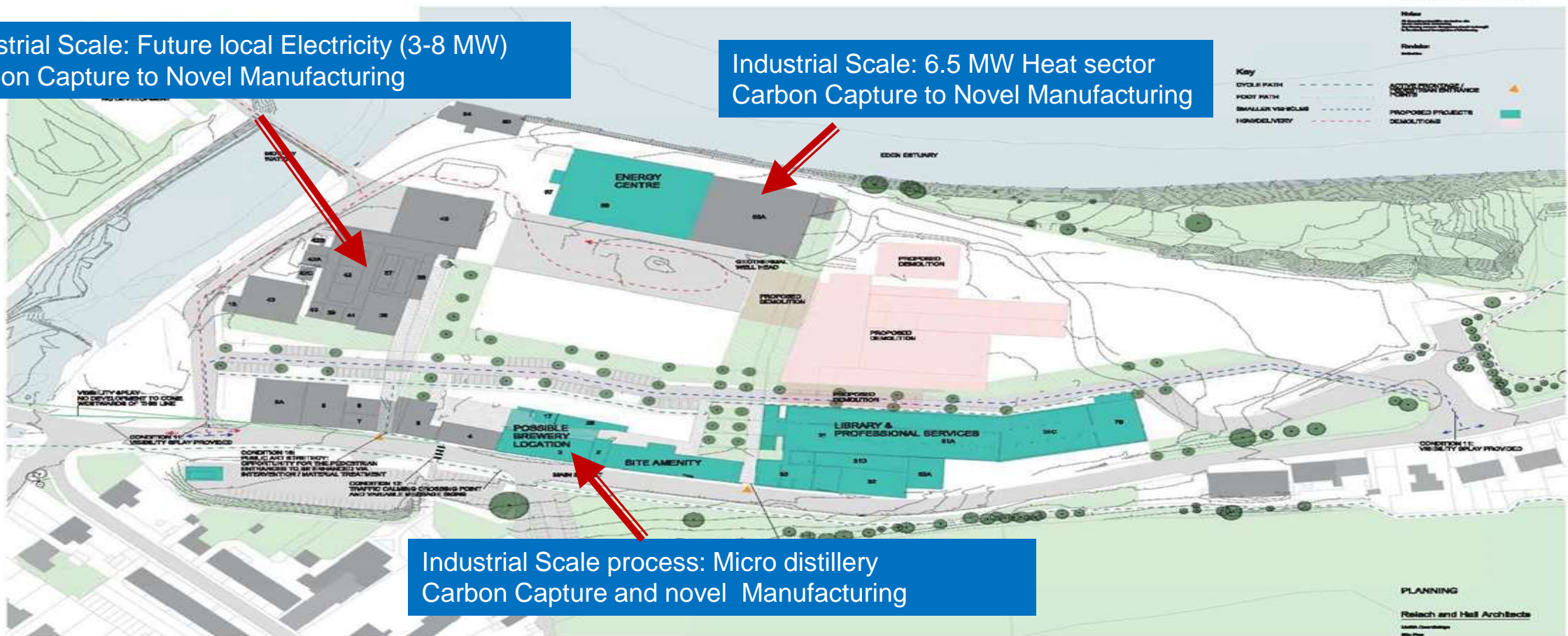
# Future Industrial Emissions Reduction



Industrial Scale: Future local Electricity (3-8 MW)  
Carbon Capture to Novel Manufacturing

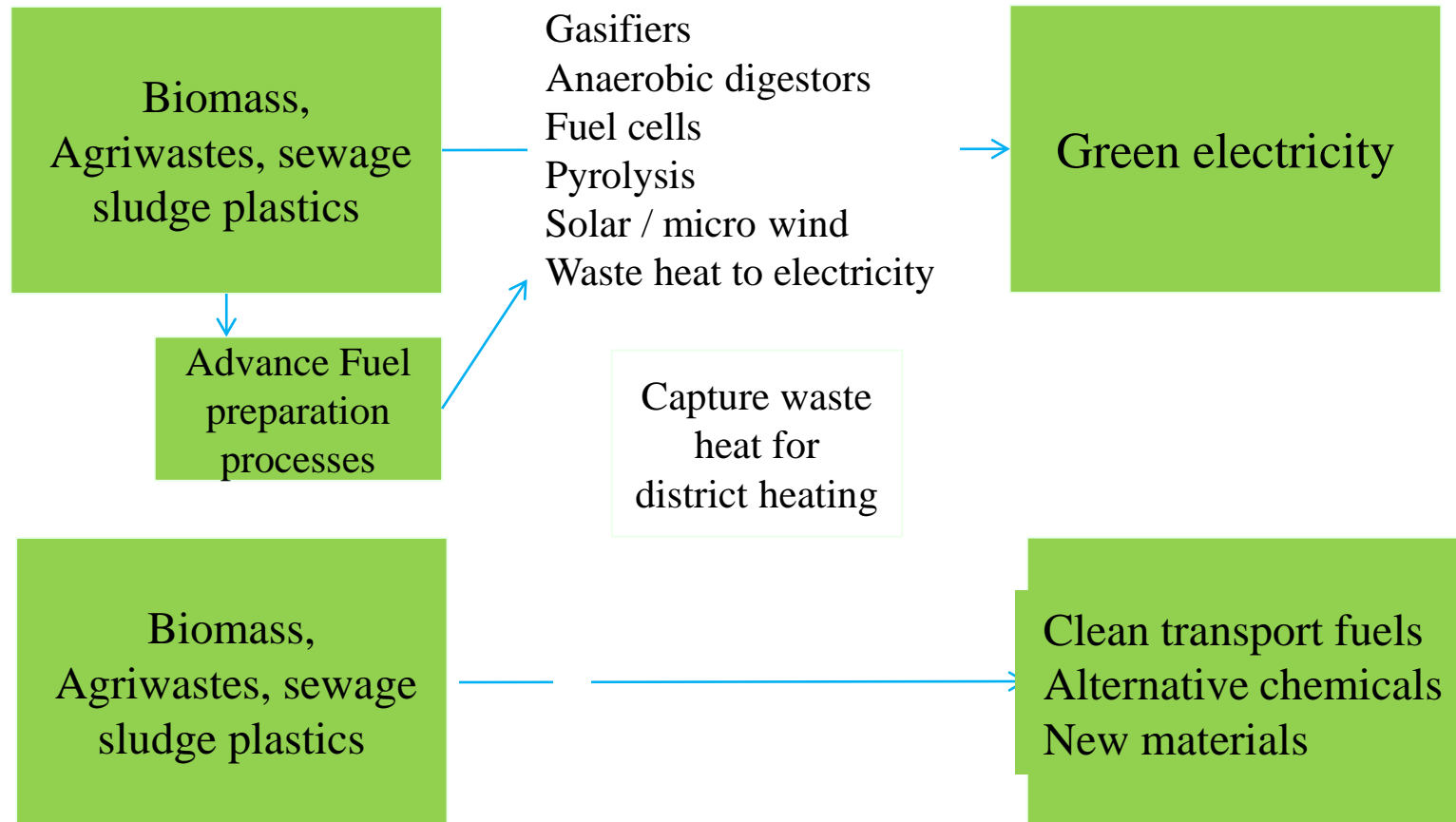
Industrial Scale: 6.5 MW Heat sector  
Carbon Capture to Novel Manufacturing

Industrial Scale process: Micro distillery  
Carbon Capture and novel Manufacturing

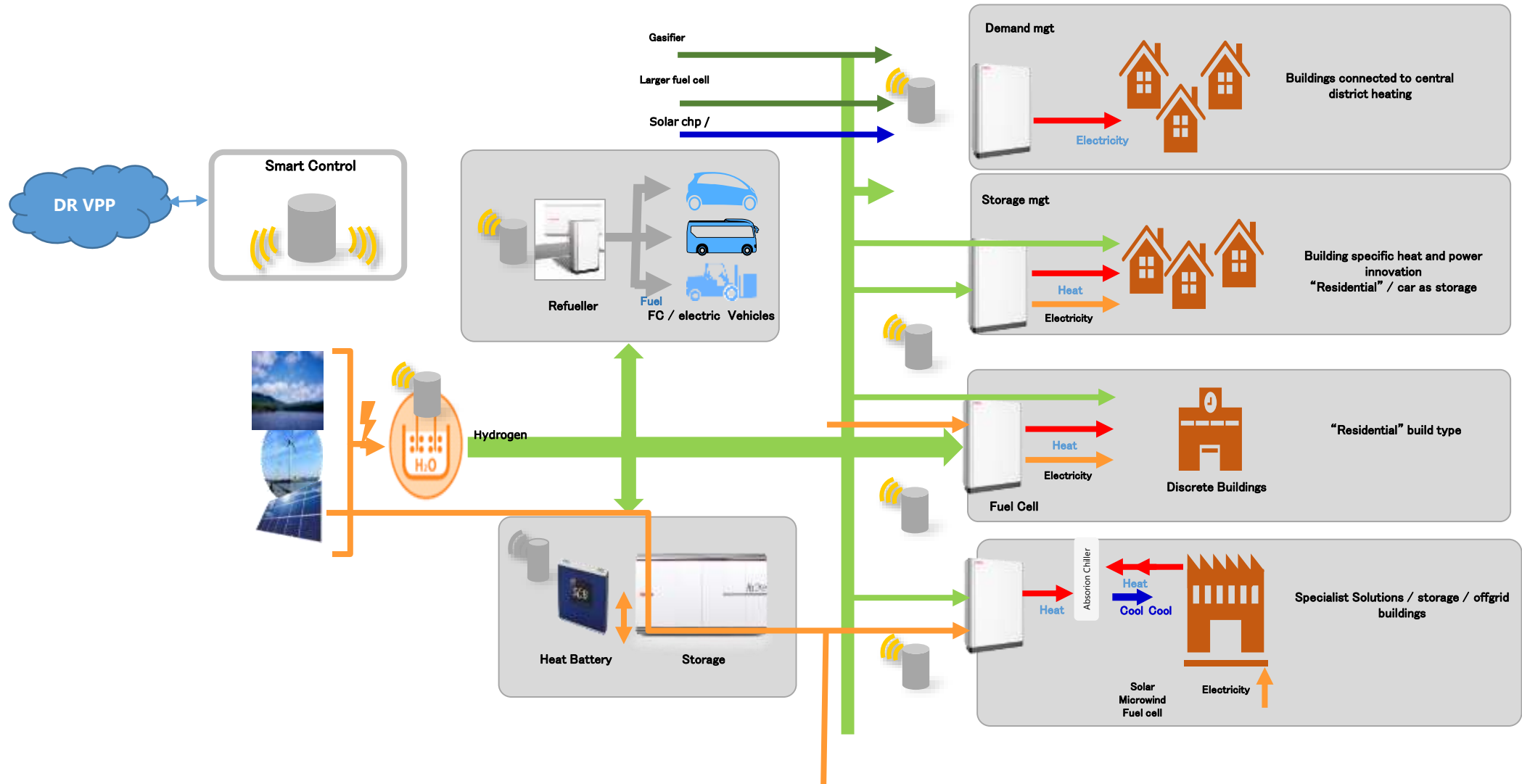


**Eden Campus: Potential for Full Site CO<sub>2</sub> Recovery 2018-2025  
Electricity, Heat, Circular Bio-Economy and Carbon reduction**

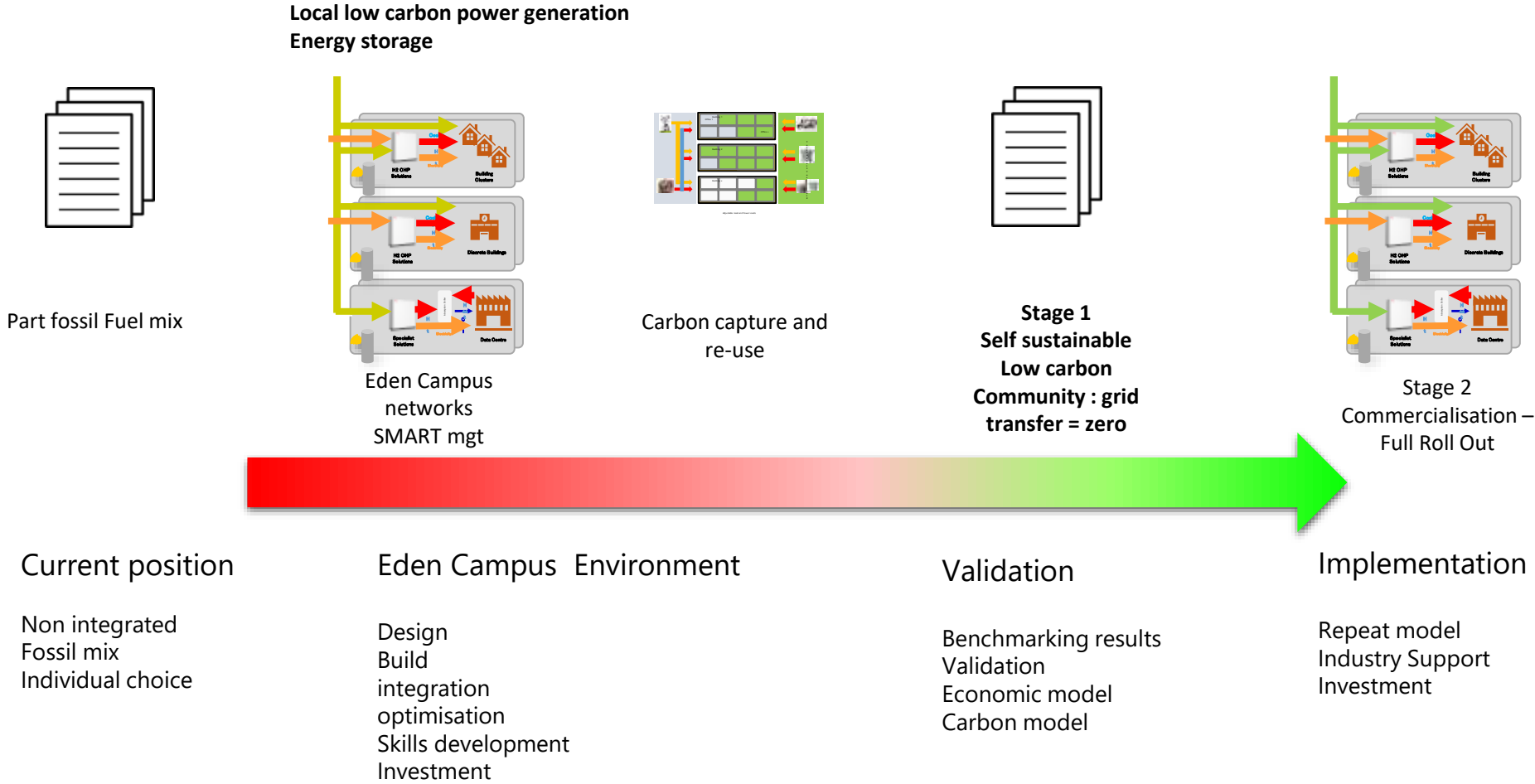
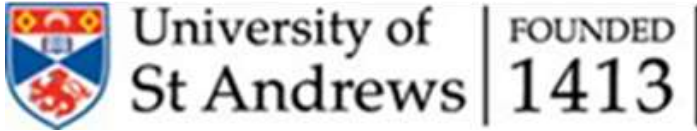
# Local Resources for Low Carbon Energy and Novel Bio-Manufacturing



# Eden Campus: Multi- Scenarios Electricity



# Eden Campus: Zero Carbon Electricity Community



# Case Study: Edenmill Distillery and Brewery

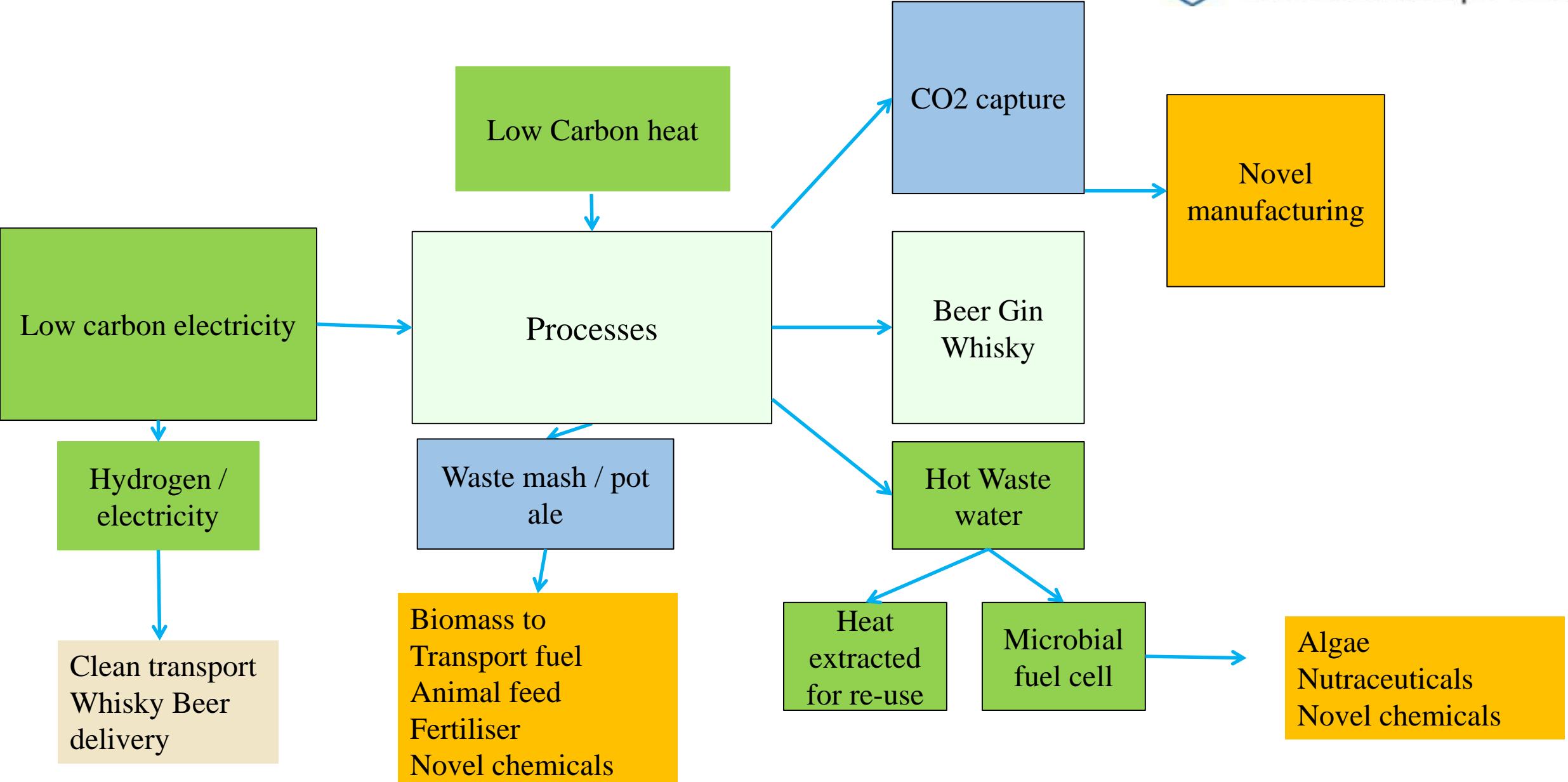


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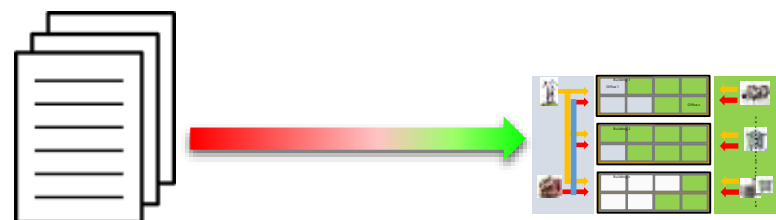
# Whole Systems Approach: Distillery Model :





# Zero Carbon Integrated Energy Community

## Knowledge transfer

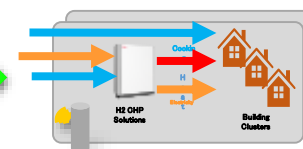


Business as usual  
Grid connected site  
electricity, gas, water

Eden Campus  
Integrated Community  
for Energy, Heating,  
transport, water

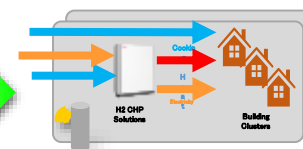
Biomass  
Geothermal  
Heat pumps  
Process heat  
Heat storage  
Seasonal heat storage

Carbon capture to product  
Local Carbon storage



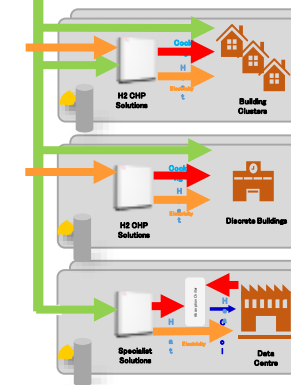
integrated Heat system

gasifier  
Solar CHP  
ORC  
Micro wind  
Fuel cells  
Energy storage  
Smart grid



integrated Electricity system

Multiple



Stage 2  
Commercialisation –  
Regional Roll Out



### Individual technology

- Smart grids
- Gasifiers
- Carbon capture to re-use
- Fuel cells
- Energy storage
- Clean transport fuels
- Heat provision
- Geothermal / solar CHP
- Gas to grid / EV
- Low carbon construction / redevelopment

### Integration and optimisation

- Smart grids
- Energy storage
- Infrastructure
- heat pumps
- Transport / heat/ electricity

### Realisation

- LOW CARBON Eden Campus
- Toolkit for low carbon
- Economic model
- Carbon model
- Knowledge transfer
- New innovation
- Circular community

### Regional Implementation

- LOW CARBON ZONE
- Local manufacturing
- Repeatable model
- Economic value
- Circular economy
- Local jobs
- Air quality improvement
- International model
- Circular economy

# Eden Campus

## Empowering Rural Innovation

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**[im65@st-andrews.ac.uk](mailto:im65@st-andrews.ac.uk)**



Novel Materials  
Novel Manufacturing



Circular Bio-economy



Zero Carbon Energy  
Communities