

## COP26 Regional Roadshow West Midlands

West Midlands Combined Authority

11<sup>th</sup> of November 2021

Practical delivery of climate change action

Workshop: **Resources & Materials**

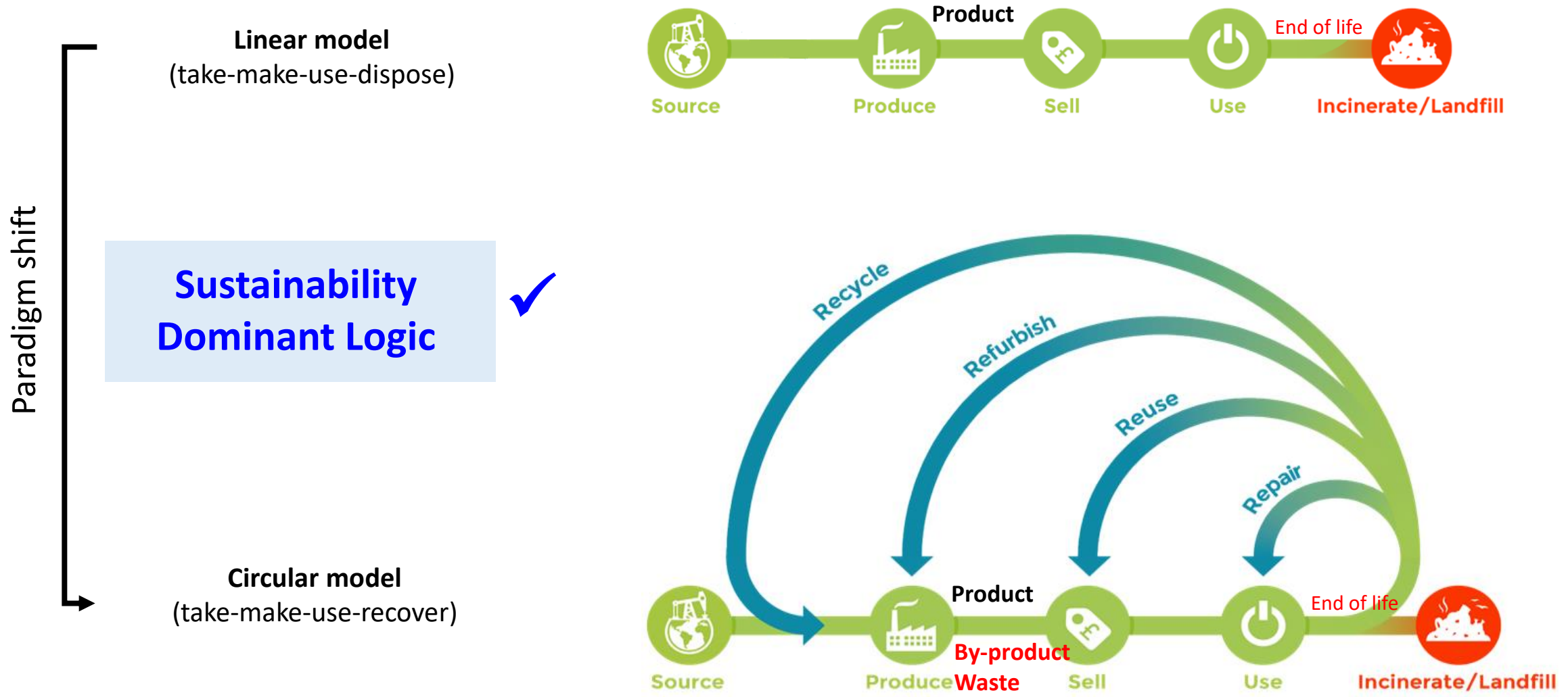
### Circular Economy and Industrial Symbiosis

Dr Luciano Batista

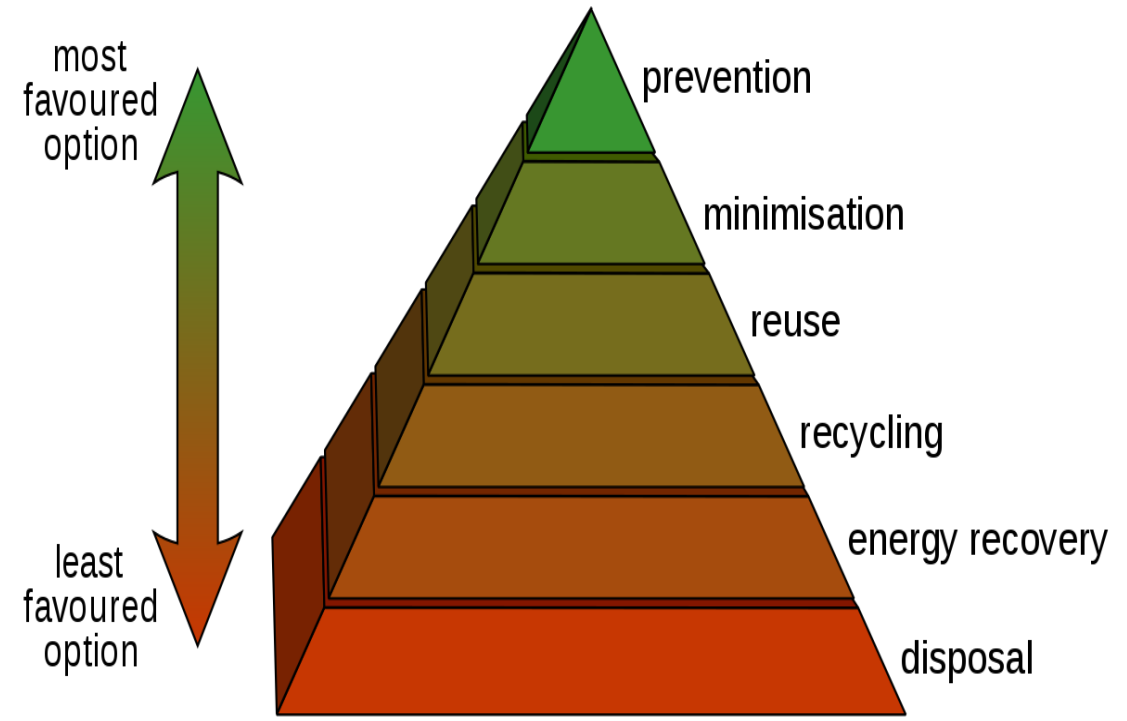
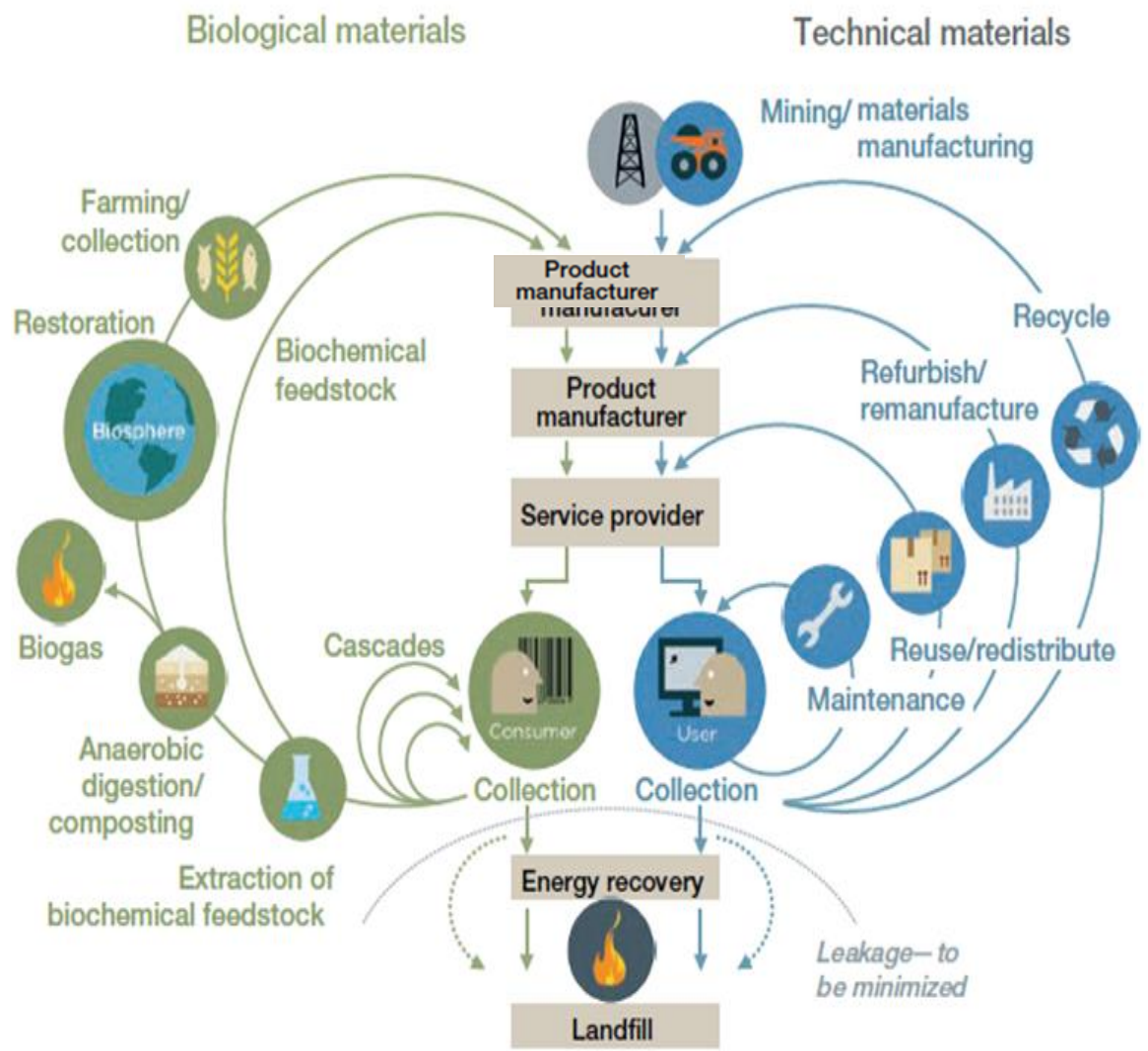
Director, CEAS (Centre for Circular Economy and Advanced Sustainability)

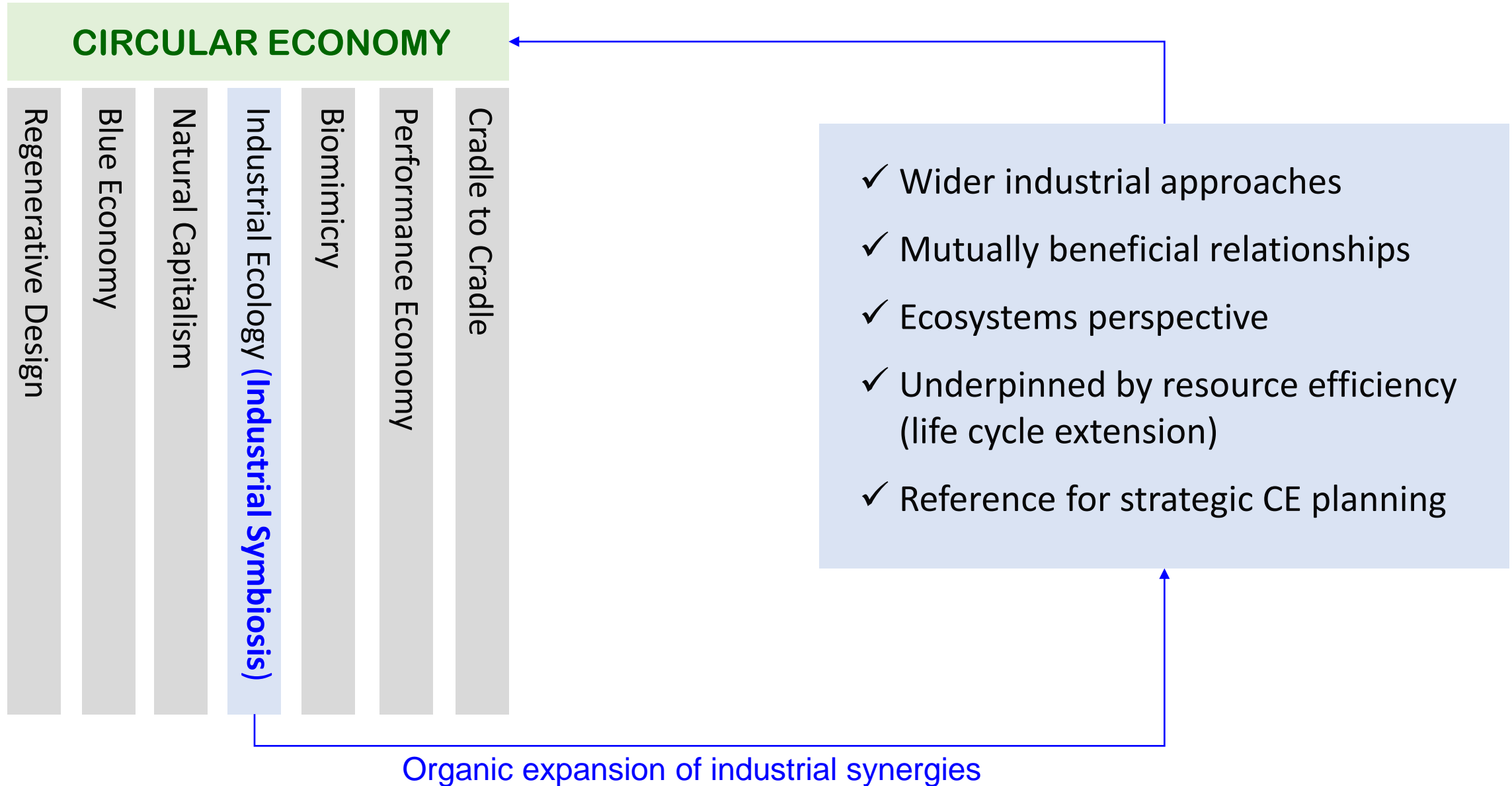
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## Linear and circular production and consumption systems

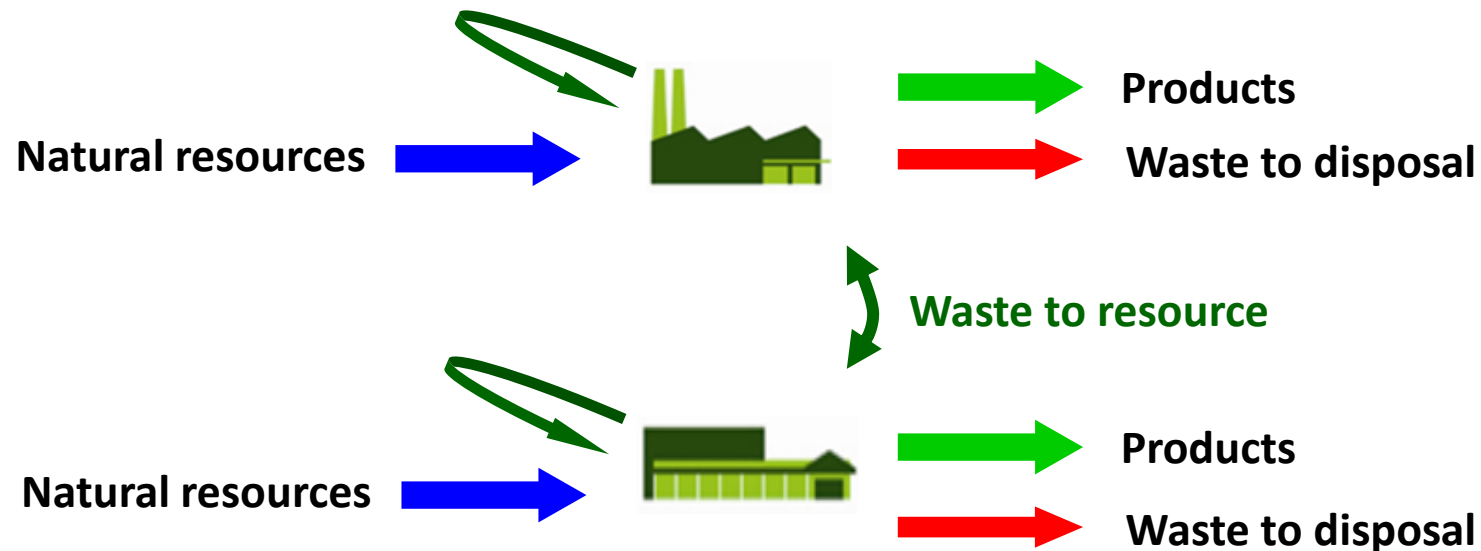


## The real picture is more complex





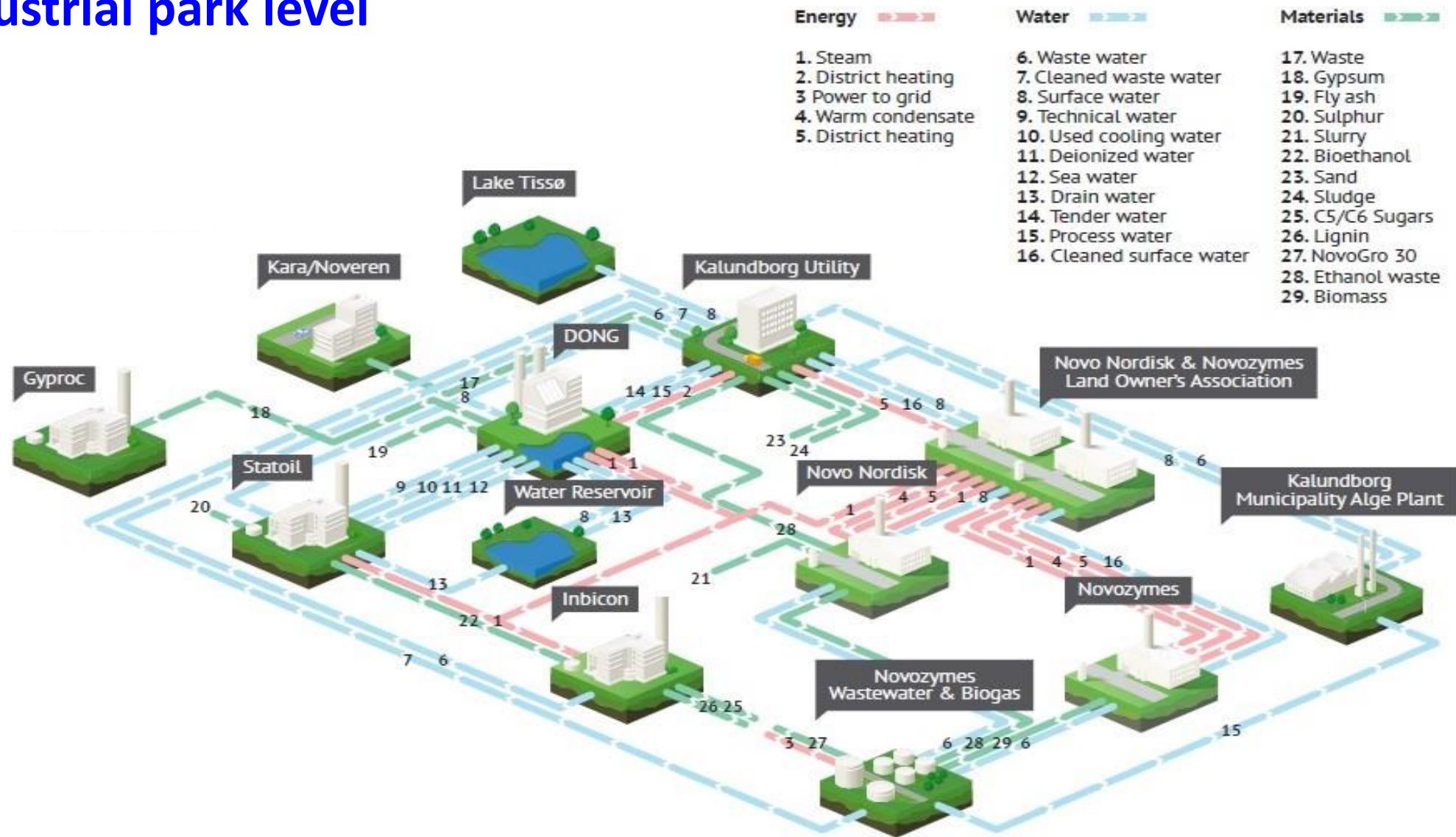
## Collaborate with others → Industrial symbiosis



**A company or sector uses unwanted or underutilised resources (e.g. waste, by-products, energy, water, logistics, expertise, equipment, etc.) from another.**



## IS at industrial park level



Source:



KALUNDBORG  
SYMBIOSIS

## IS at community level



Organic material

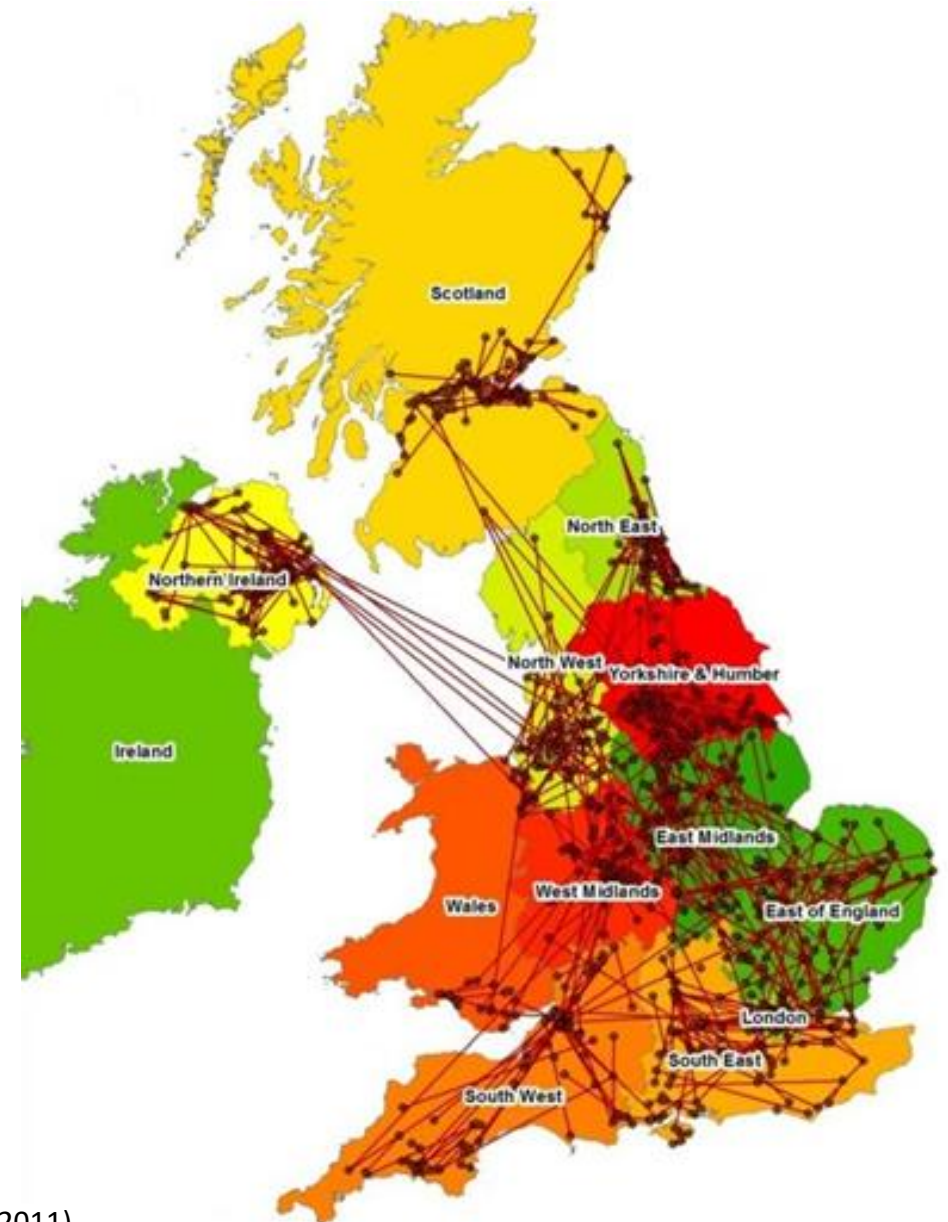


Char properties



## IS at regional level

- Half of synergies within 21 mile radius
- One-quarter of synergies over 40 miles radius
- Some resources travel over 200 miles:
  - Textiles
  - Metals
  - Minerals
  - Paper and card
  - Hazardous waste





## Industrial symbiosis



- Geographical proximity is not a requirement
- It is not only for large companies (>90% SME in UK and other networks)
- It does not necessarily require major investments



## Sectoral-specific & Sectoral-bridging studies

£520k funding



**Apparel & Textile**  
Apparel Advance: Towards a sustainable apparel manufacturing ecosystem



**Construction**  
ROADS UK: Re-imagining the Opportunities of Asphalt Development for Sustainability in the United Kingdom



**Food**  
Conversion of mushroom waste into value-added products



**Aerospace**  
Enabling the Circular Economy in Aerospace Manufacturing through Industrial Digital Technologies



**Packaging**  
Exploring the Circular Product Design for Packaging Industry



- Fragmented initiatives
- Common standards and guidelines on the measurement and reporting of symbiotic exchanges
- Development of awareness and motivating market conditions for industrial symbiosis
- Information sharing, governance structures



*“The concept of **industrial symbiosis** is indispensable to the long-term development of global industry **in all countries of the world...** Economies can achieve a more sustainable industrial development **towards a circular model** more rapidly **by taking advantage of the opportunities inherent in this approach.**”*

Heinz Leuenberger, Former Director of Environmental Branch UNIDO

**Thank you**

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