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Green Investment for Transformative Change In Cumbria

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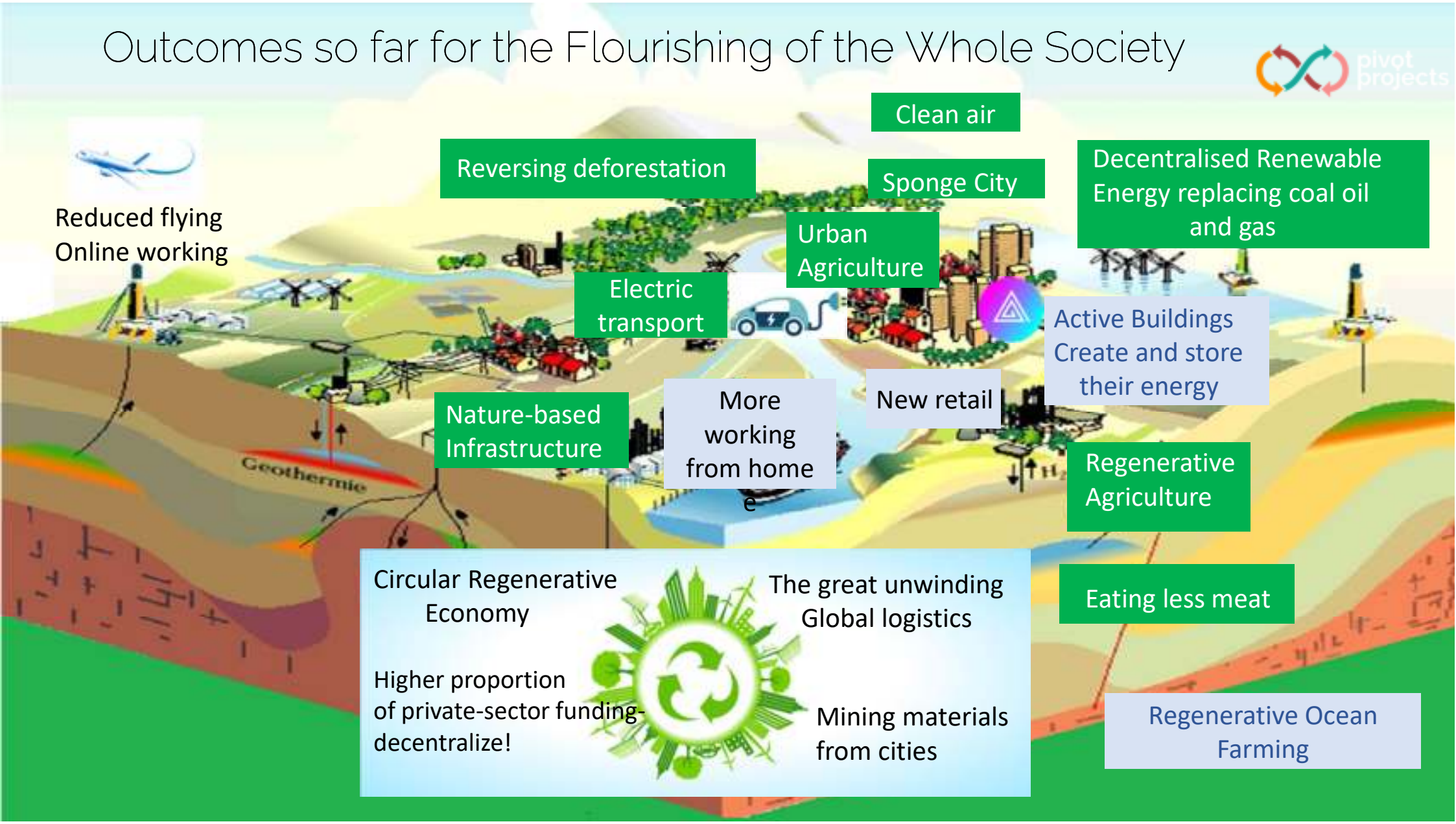
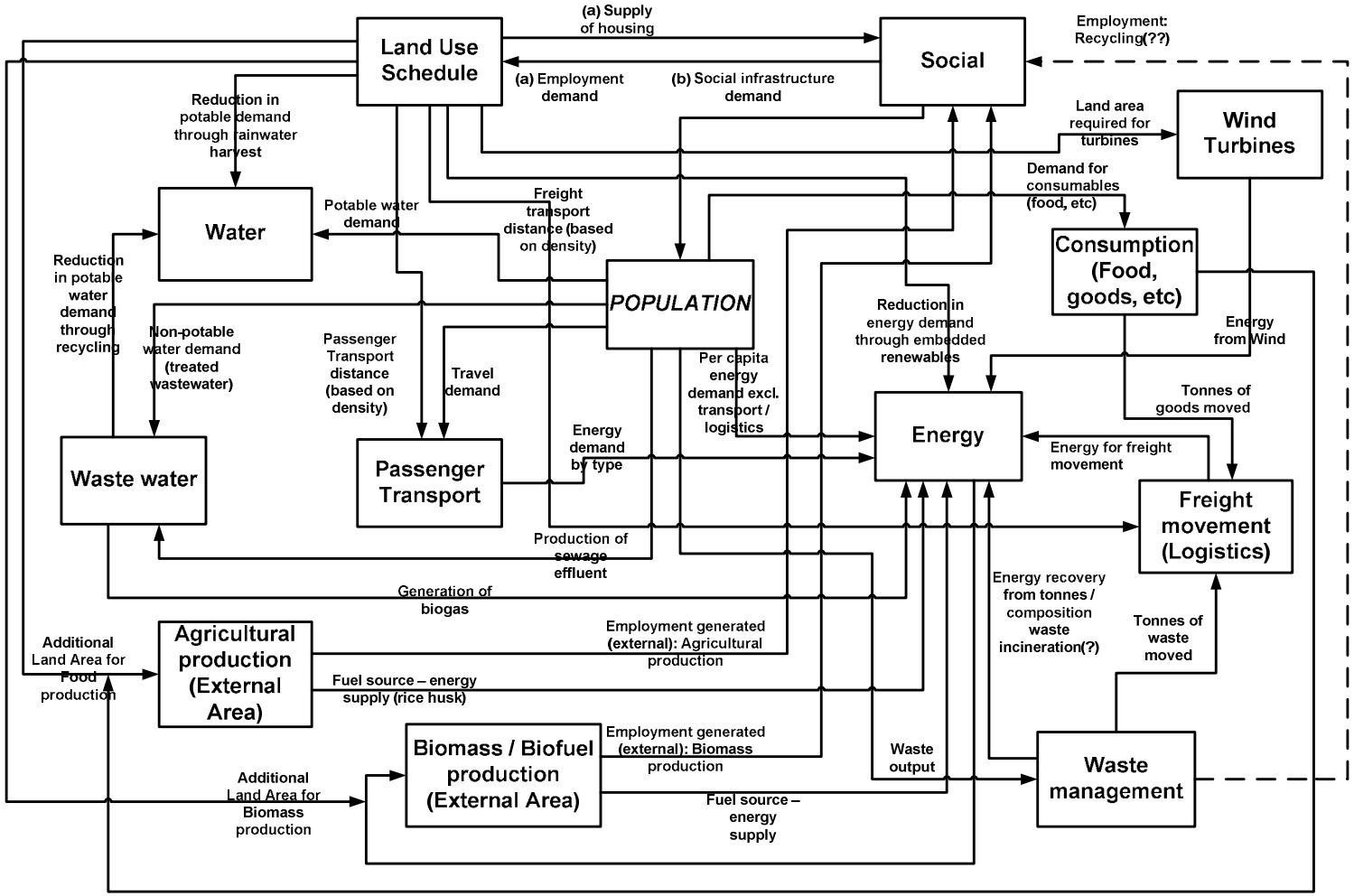
Chairman and Founder Resilience Brokers
Visiting Prof Sustainable Systems Engineering University of Bristol

Discovering new possibilities for a post-COVID-19 world

Outcomes so far for the Flourishing of the Whole Society



The system of community life



Regenerative Agriculture and urban-rural resource sharing water , energy, compost, nutrients, food

7 Big innovation examples and associated new business models

Silvopastoral

1. Agro-forestry to sequester carbon, diversify production, prevent soil loss, mitigate flooding.

Silvoarable

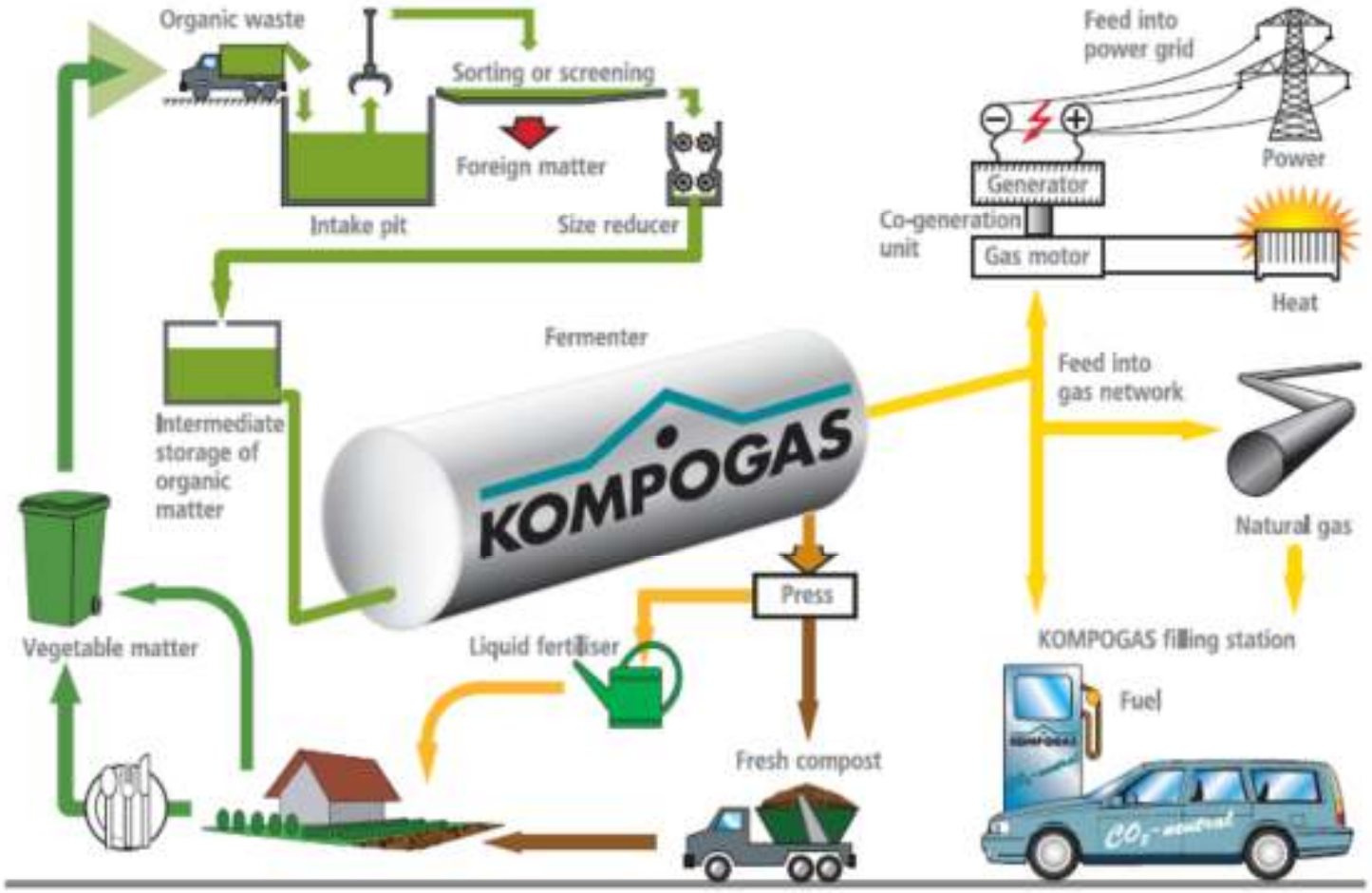
2. Fertiliser replacement Bion which activates electromagnetic bio-structures & uses local materials

- Reflects or absorbs solar energy by extra 85%
- Reduces or increases soil surface temp by 50%
- Reduces loss of water, greenhouse gas emissions and nutrients. Supports sequestration.
- Increases crop production
- Reduces growing period for potatoes by 35%
- Increases crop production by up to 250%

3. Agri-voltaics

Potential increased crop yield (lower transpiration) plus revenue from solar energy

4. Energy from waste and nutrient recycling



5. New business models

Global market potential of 4Gigaton CO2 sequestered in soils is $60billion per year, maybe $20-30million per year in UK

Indigo Agriculture, a Boston-based agritech start-up, will start paying farmers to store carbon in soil, as it seeks to spur a novel market that could help address climate change.

Indigo said it hoped to sign up more than 3,000 growers, covering more than 1m acres this year.

They will be paid $15 for every tonne of carbon dioxide that is stored underground.

It plans to sell the carbon credits that can offset a company's inherent emissions to the food and agriculture sector.

Farming practices such as minimal tilling of the soil when planting, planting cover crops in-between main crops, and crop rotation are all considered.

https://www.ft.com/content/83c1da2a-8c70-11e9-a1c1-51bf8f989972

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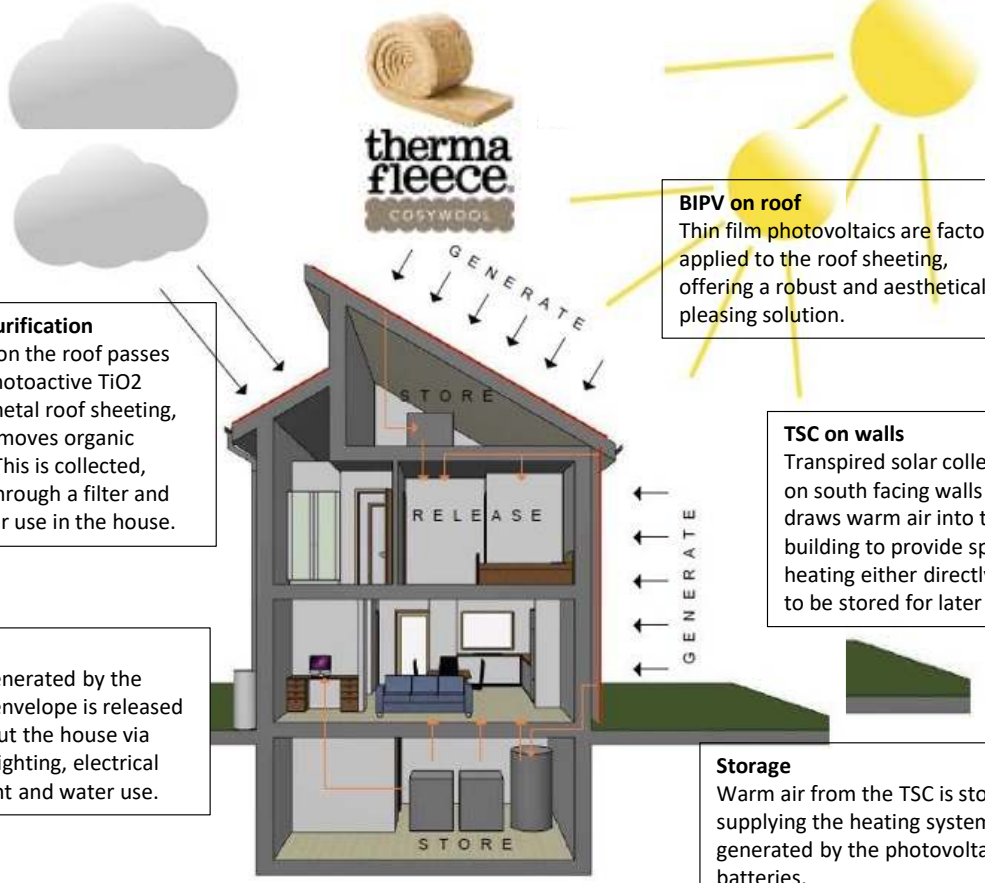

Water purification
Rainfall on the roof passes over a photoactive TiO2 coated metal roof sheeting, which removes organic matter. This is collected, passed through a filter and stored for use in the house.

BIPV on roof
Thin film photovoltaics are factory applied to the roof sheeting, offering a robust and aesthetically pleasing solution.

TSC on walls
Transpired solar collector on south facing walls draws warm air into the building to provide space heating either directly or to be stored for later use.

Release
Energy generated by the building envelope is released throughout the house via heating, lighting, electrical equipment and water use.

Storage
Warm air from the TSC is stored in a tank supplying the heating system. Electricity generated by the photovoltaics is stored in batteries.

6. Buildings as Power Stations Retrofit and New Build

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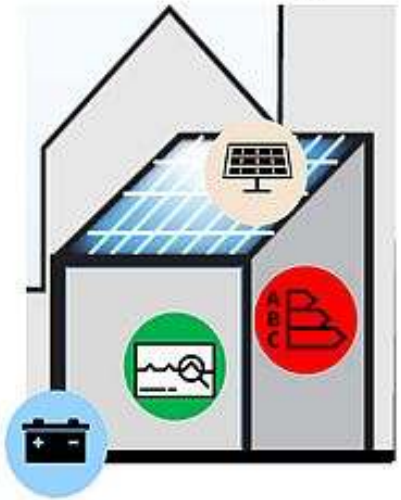
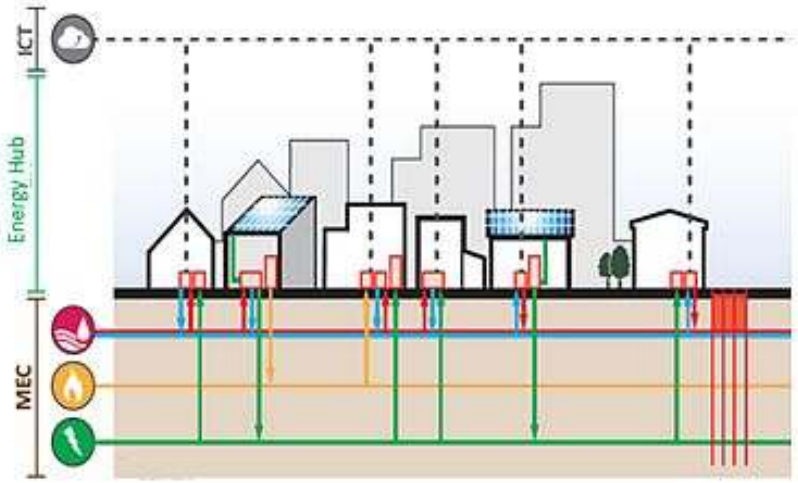
7. De-centralized energy systems

Building Energy Systems and Technologies



- Decentralized Energy Systems
- Building Efficiency
- Energy management
- Storage systems

Multi-Energy Systems



- Energy hub
- Multi-energy grids
- Network convergence
- Retrofitting strategies

Demonstration

- Technology integration
- Operational schemes

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Thank you

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