Local Governance Roundtable November 2018

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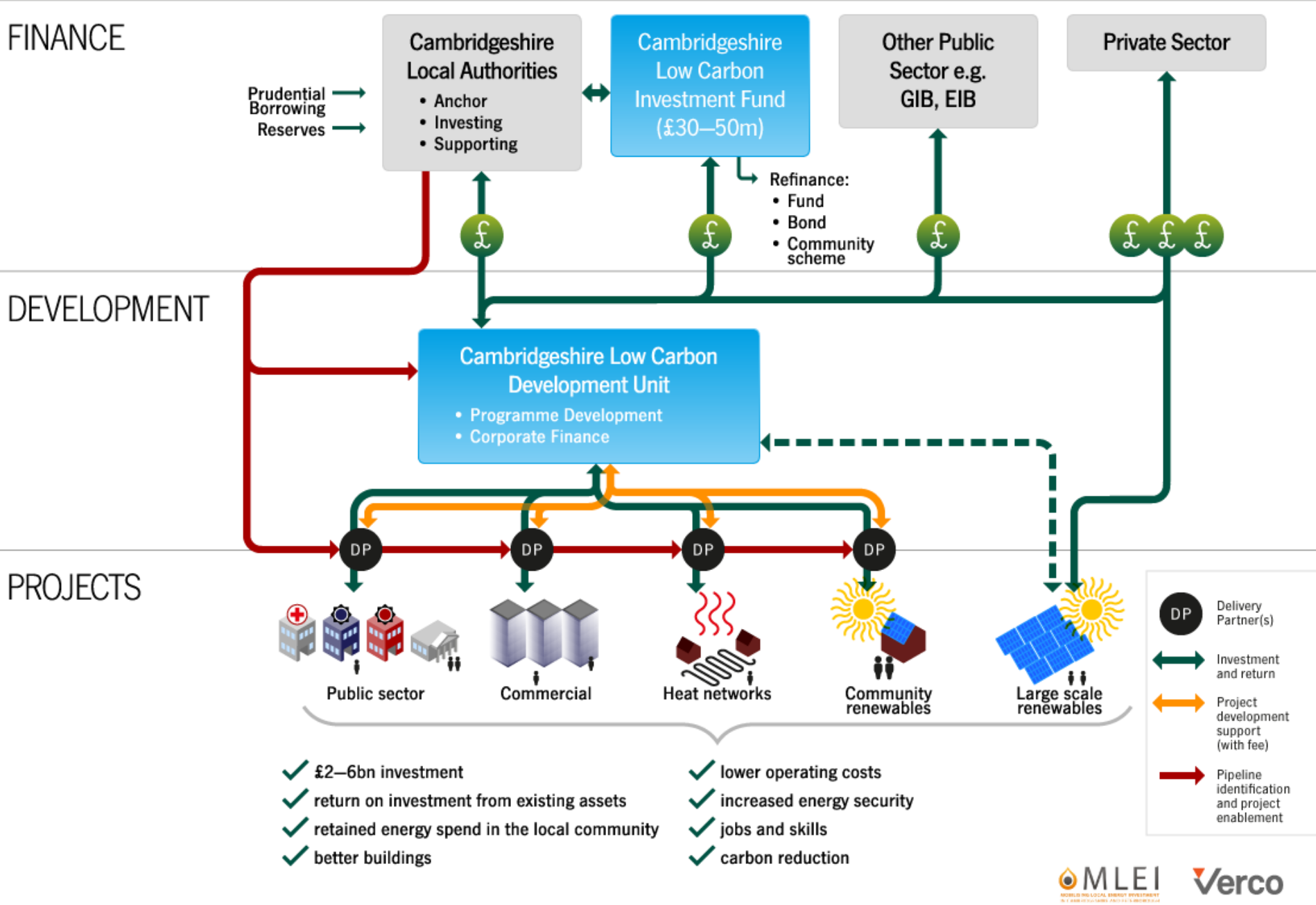
Project Director,

Mobilising Local Energy Investment

Organising structure in Cambridgeshire 2014



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Cambridge: Energised For Growth – UKRI Smart Energy Systems: Demonstrator

Smart Systems integration of power, heat and transport.

Vision

- A dynamic energy system across Cambridge that demonstrates new business models that intelligently link supply, storage and demand patterns across power, heat and transport.
- The creation of a network of over 50 energy demand and generation nodes across Cambridge.
- This project will provide a new template for local energy systems that can be replicated across the UK..

Smart Energy Objectives

- Provide cleaner, cheaper, more desirable energy services for the end user through **capacity management**.
- Develop approaches that lead to more prosperous and resilient communities through **peer-to-peer trading**.
- Test new business models and develop a software platform to understand how to **replicate at scale**.

Innovate UK want a dynamic energy system that:

- Provides a whole system approach, removing siloed decision making.
- Brings together the energy market and regulation across electricity, heat and transport to transform services for users.
- Develops holistic approaches to existing challenges to produce resilient, compatible and complementary systems.

3D images of Smart Energy Grid for St Ives, courtesy of Bouygues Energies and Services Ltd.

Supporting the Future Power Systems Framework

- The flexibility to meet changing but uncertain requirements
- The recovery from major events or emergencies
- The change in mix of electricity generation
- The active management of networks, generation, storage and demand
- The use of incentives to enable customers to benefit and the system to operate more efficiently
- The emergence of new parties providing new services to customers
- The emerging need for coordination across energy vectors

The project delivers against all of these drivers of new dynamic systems.

The scale of future electricity needs and the challenge of decarbonising power supply help to explain why global investment in electricity overtook that of oil and gas for the first time in 2016 and why electricity security is moving firmly up the policy agenda.

The increasing use of digital technologies to develop smart energy systems improves efficiency and facilitates the flexible operation of power systems, but also creates potential new vulnerabilities that need to be addressed.

Map is for illustrative purposes only and is not reflective of actual site boundaries

Cambridgeshire County Council · University of Cambridge · Cambridgeshire & Peterborough Combined Authority · origamienergy · elementenergy · DELTA · Bouygues Energies & Services · Cambridge City Council

To whom will benefits accrue?

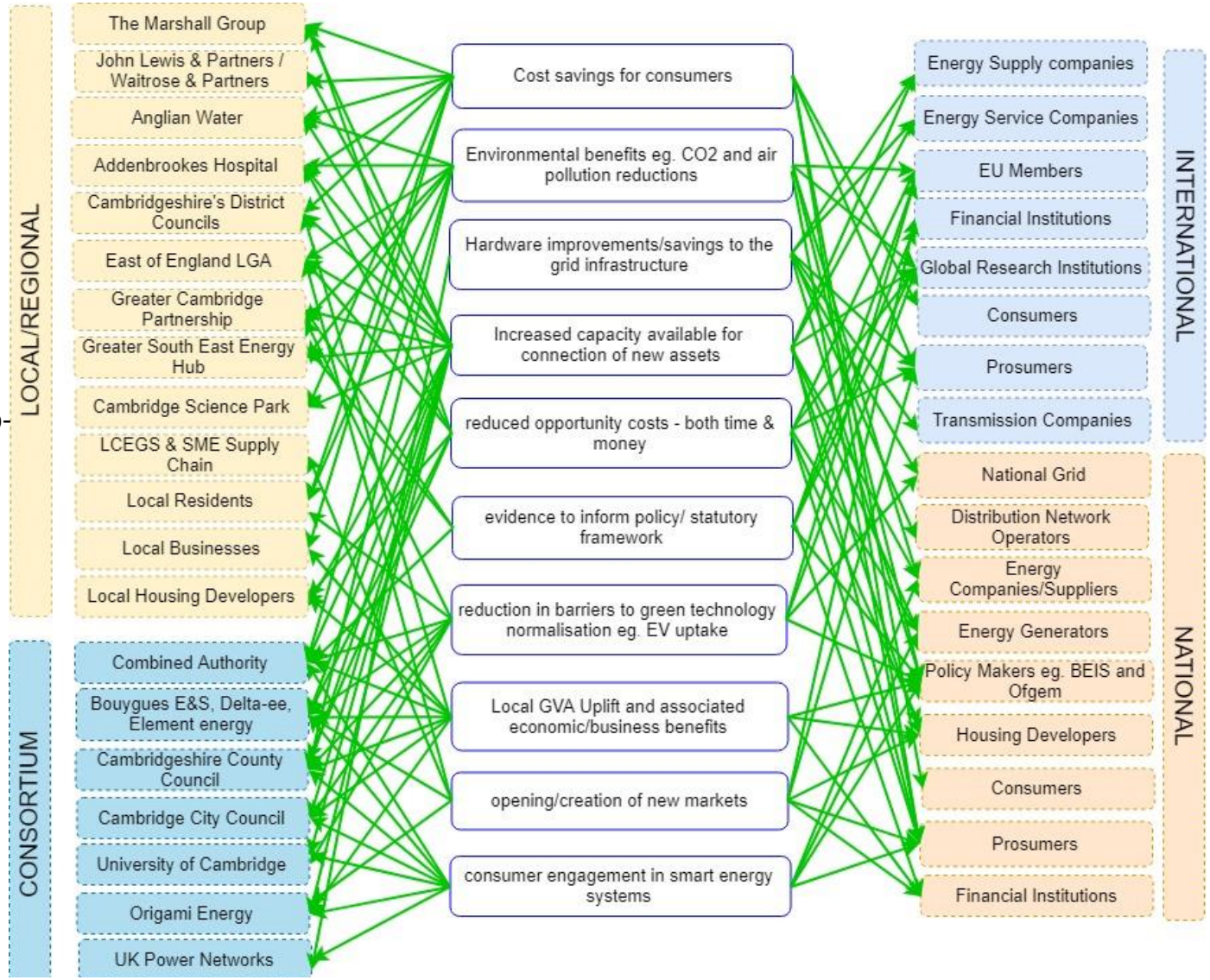
Many different stakeholders operating at different scales

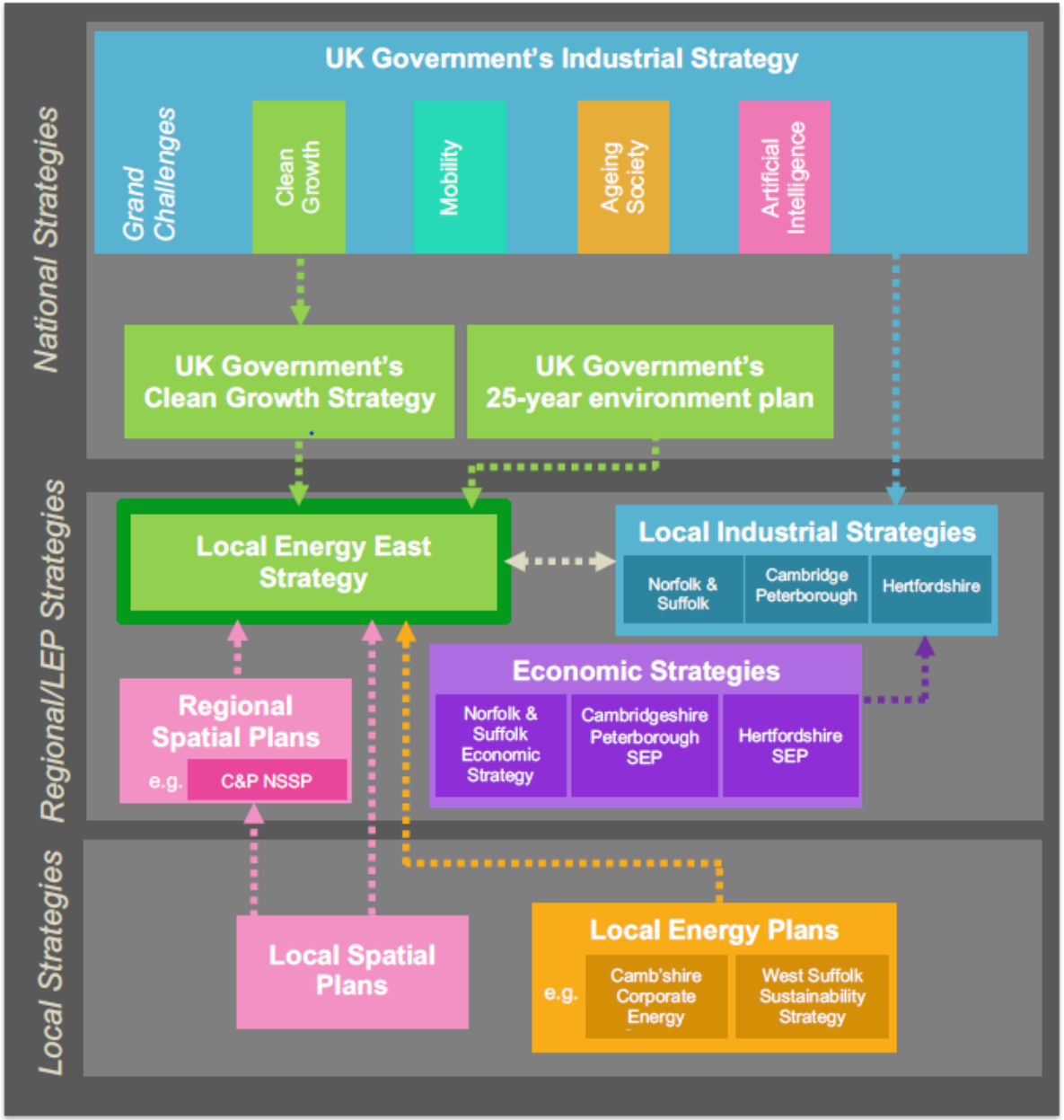
Highly complex accrual of benefits

Benefits range from environmental to socio-economic to political

Multiple benefits accrue to each stakeholder

Quantifying benefits - how to do this?





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Tri-LEP Strategy: Local Energy Investment and Delivery Strategy, 2018

Where do the following fit

Transport Strategy
DNO business plans
OFGEM

Planning for Growth

- CPIER identified energy infrastructure as strategic infrastructure
- Local plans & strategic spatial plans
- Transport plans
- Where should the governance of strategic energy infrastructure sit?

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Regulation

- access to the distribution network
- Scale and pace of growth
- Growth can't simply go to places where network capacity is available
- DNO's cant invest ahead of need
- Cost of reinforcements is not fairly distributed
- Lack of network data
- No Small/medium sized generation schemes

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Market

- Pricing mechanisms to shift demand
- Supply/demand balancing behind the meter/Microgrids
- Mechanisms required to allow local trading

Skills

- Electrification of Transport - e.g new CAM metro
- Electrification of Heat – housing standards,
- Energy management – smart control systems, real time, data management
- Planners – microgrids, heat networks, EV charging