Smarter Cities Through Collaboration

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Civic Innovation Challenge

Thirty3

LONDON DATASTORE

GREATER**LONDON**AUTHORITY

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Horizon 2020
European Union funding
for Research & Innovation

€ 24M
EU
Funding

€ 250M
Triggered
investment

€ 876M Potential investment
(above € 500M target)

LONDON
WARSAW
BORDEAUX
MILAN
LISBON
BURGAS
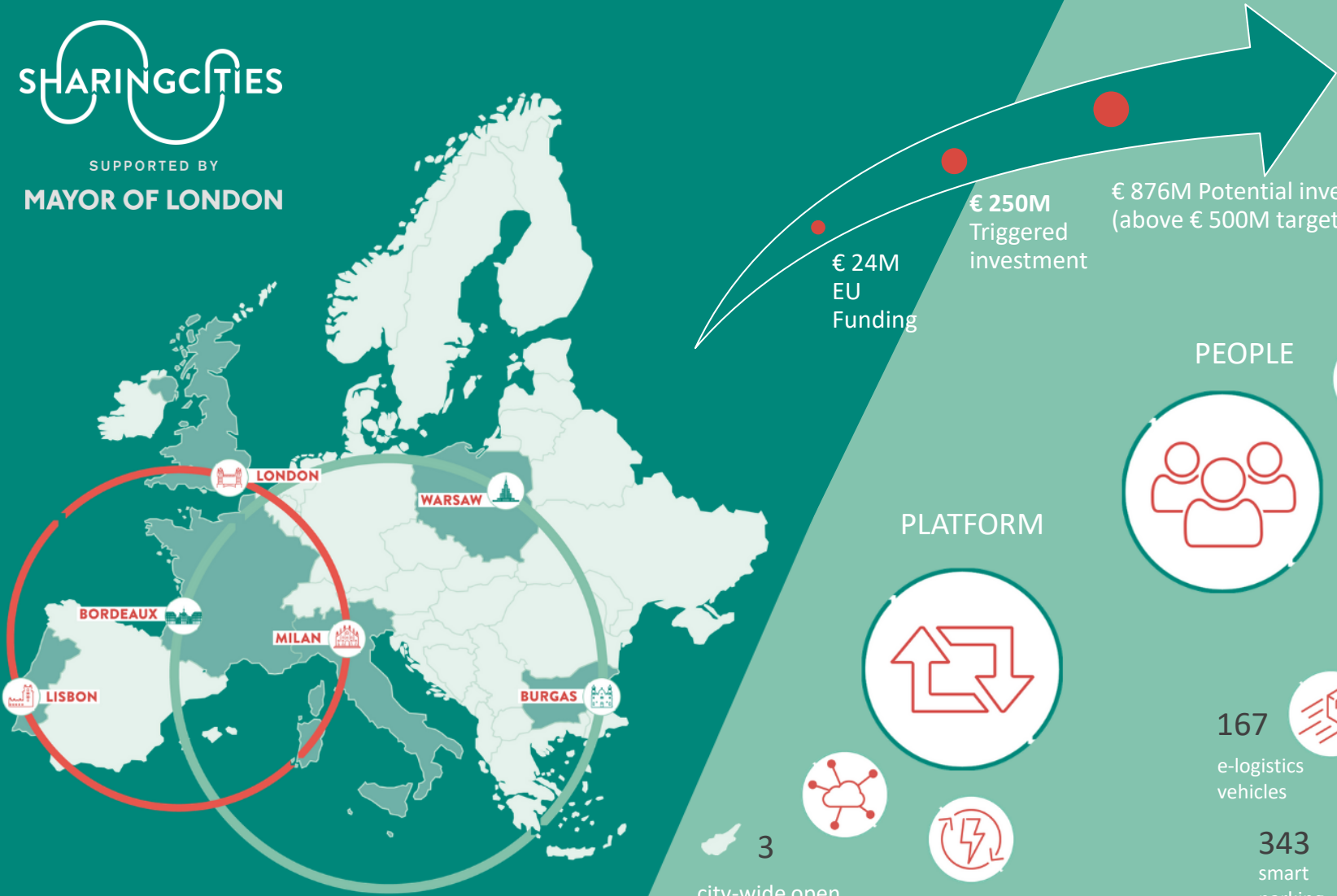
PEOPLE

2,000
users on
digital
social
markets

PLATFORM

PLACE

2,000
planned e-bikes

855
e-bikes
operational

2,400
smart
lampposts

167
e-logistics
vehicles

6,125,000
kWh/y
reduction
in energy

3
city-wide open
data platforms

3
city-wide sustainable
energy management
systems

343
smart
parking
spaces

113
e-cars

311
e-charge
points

Sharing Cities: Building retrofit solutions

SMART, LOCAL AND FAIR ENERGY SYSTEM IN THE ROYAL BOROUGH OF GREENWICH, LONDON

In London's Greenwich Peninsula ward conservation area two social housing estates underwent a deep energy retrofit.

41% of the borough's emissions come from housing, with 10% of households living in fuel poverty.

LOCAL INTERVENTIONS

Energy efficiency fabric improvements

Water source heat pump: Drawing water from the Thames basin to deliver locally generated energy with lower emissions

Sustainable Energy Management System (SEMS): Taking in real time data and using dynamic energy management to achieve additional cost and carbon savings at a district level

Internet of Things (IoT) technologies: Smart thermostats, temperature, humidity and boiler sensors, and energy monitoring

RENEWABLE ENERGY SOURCES
ELECTRICITY GRID
ELECTRICAL ASSETS
HEAT NETWORK
BUILDINGS
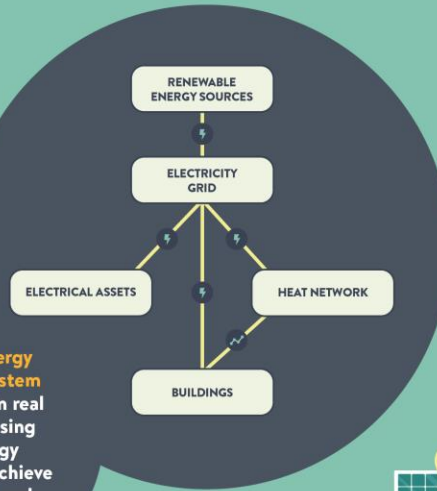
HELPING MILAN REALISE ITS VISION FOR NEAR-ZERO EMISSION DISTRICTS

In Milan, building heating systems are responsible for nearly 50% of local emissions.

In Sharing Cities' pilot area, 70% of real estate assets were attributed G-F energy class.

Before & After: Complex Interventions
- Photovoltaic Panels
- Roof & facade thermal insulation
- High-performance stairwell windows
- LED lighting
- Thermal regulation & thermostats
- Heating system remote management

CO-DESIGN PROCESS

Over 900 families & 12 co-design meetings

DESIGN
Scenarios Presentation

KNOWLEDGE
Sharing of energy analysis

TRUST
Introduction & Listening

IMPACT: LONDON

With Greenwich Energy Hero, residents were able to momentarily reduce their energy consumption by 80% and alleviate pressure on the grid during peak demand.

At Ernest Dence estate, the completion of the retrofit works combined with the installation of a heat pump could lead to 68% CO2 savings.

527,000kg CO₂

2.4M kWh (667 homes annual usage)

Projected annual savings after retrofit works completed

IMPACT: MILAN

60% energy reduction across entire retrofit programme.

Greater citizen awareness of retrofit impact on energy bills, environment and wellbeing.

470,000kg CO₂

annual savings

Sharing Cities: E-mobility solutions

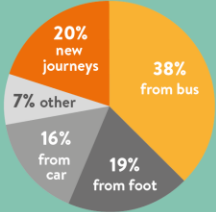## HOW LISBON'S BIKE SHARING SCHEME BECAME THE CATALYST FOR AN ACTIVE CYCLING CULTURE

Portugal has one of Europe's lowest rates of cycling. Car ownership is traditionally very high.

Lisbon is an old city with many historic districts and narrow streets. It is also very hilly.

Lisbon introduced its first city-led bike sharing scheme in 2017 through Sharing Cities to help realise its new city strategy for mobility.

Upgrading lisbon's cycling infrastructure has unlocked the city's micro-mobility network. Since 2017, 3 million journeys have been made by 16,000 users.
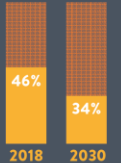
Daily users

26% of residents use the bikes daily

Mode shifts

- 20% new journeys
- 38% from bus
- 19% from foot
- 16% from car
- 7% other

FUTURE IMPACT: LISBON

Cycling lanes expected to double to over 200km.

3-fold planned increase in bike fleet with 2,000 bikes in circulation, 80% of which will be electric.

46% 2018
34% 2030

Target reduction in private car use to 34% by 2030

PUBLIC TRANSPORT HUB

MILAN: A HUMAN-CENTRIC E-MOBILITY STRATEGY DELIVERS FIRST AND LAST-MILE MOBILITY OPTIONS ACROSS THE CITY

Mainstreaming Mobility-as-a-Service
Expanding accessibility to sustainable transport has been a key priority of the Municipality of Milan.

10 mobility islands have been implemented in Milan to respond to strategic goals set by the city

What is a mobility island?
A mobility island brings together multiple mobility services in one location, making it easier for people to access a range of low carbon mobility options.

150 e-bikes equipped with child seats integrated into the city's bike sharing scheme = 3,300kg CO_2 saved in 2019

MAINSTREAMING MOBILITY-AS-A-SERVICE

14 new bike-sharing stations in the south-east suburbs & 60 electric vehicle charging points

9 e-vans and 2 e-cargo bikes for last-mile logistics = 39,000kg CO_2 saved in 2019

175 smart parking sensors for the disabled, loading and unloading, and mobility islands

IMPACT: MILAN

Greater access to low-carbon mobility options for families.

Improved access to e-mobility network for people living outside the city centre.

35km of new cycle paths planned by December 2020 beyond pilot area.

A NETWORK OF INTEGRATED, LOW CARBON TECHNOLOGIES SHAPED BY DATA AND CITIZENS

REAL-TIME URBAN DIGITAL INFRASTRUCTURE

CO-DESIGNED WITH CITIZENS

DATA-SUPPORTED DECISION MAKING

6 million kWh/yr saved through retrofitting 15 buildings of different types. Pioneering retrofit of Lisbon's City Hall leads to...

36% energy savings

DIGITAL SOCIAL MARKET
In Milan, over 2,000 people are registered on SharingMi, the peer-to-peer, eco-friendly network which encourages greener choices

The Sustainable Energy Management System (SEMS) reduces energy bills by 10%

If deployed at UK level, this could reduce emissions 30% by 2050

CO_2 reduction
30%
65%

TECHNOLOGY: E-BIKES
Our city-led, docked e-bike schemes have transformed the way people move around cities.

Lisbon plans to expand its bike fleet to over 2,000 - 80% will be electric.

TECH: SHARED E-MOBILITY
We have led the way in testing mobility as a service:
855 e-bikes operational
167 e-logistics vehicles
113 e-vehicles
311 ev charging points
343 smart parking spaces

ENVIRONMENTAL BENEFITS
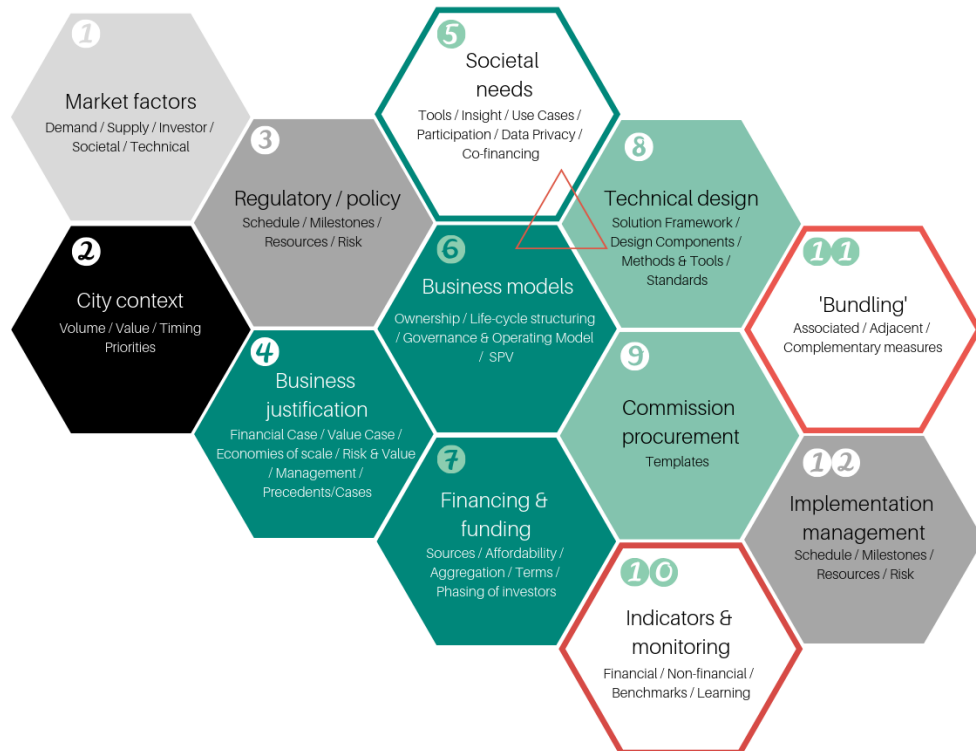Accelerate efforts to decarbonise cities

SOCIETAL BENEFITS
Create better places to live, work & play

ECONOMIC BENEFITS
Stimulate the smart city marketplace

Packaging framework & playbooks

The Challenges

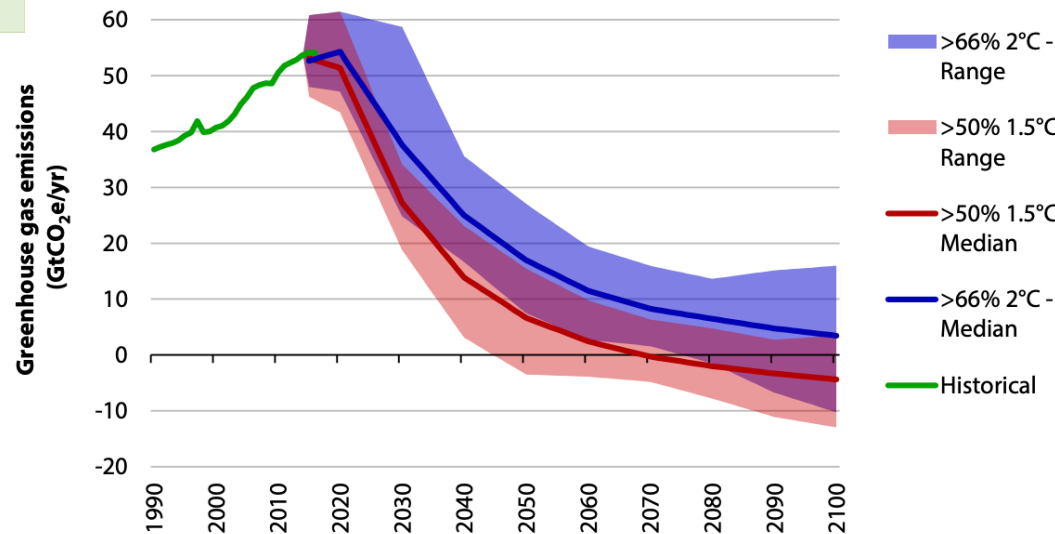*We want to tackle the major challenge of net zero economic growth*

Fragmentation and scale

London's fragmentation (33 boroughs, 10 pan-London agencies etc) makes it hard to collaborate and achieve scale.

Foundations for growth

Potential for growth in smart cities is significant, but it's not a market that we encourage or invest in sufficiently.
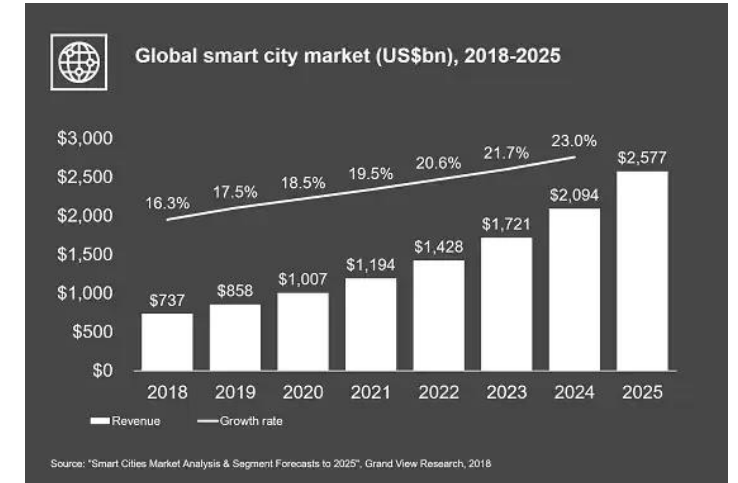

Carbon reduction

We need to repeat the reduction in carbon emissions in 2020 caused by COVID-19 **EVERY YEAR** until 2050. This will **NOT** happen without predictive analytics and optimisation.

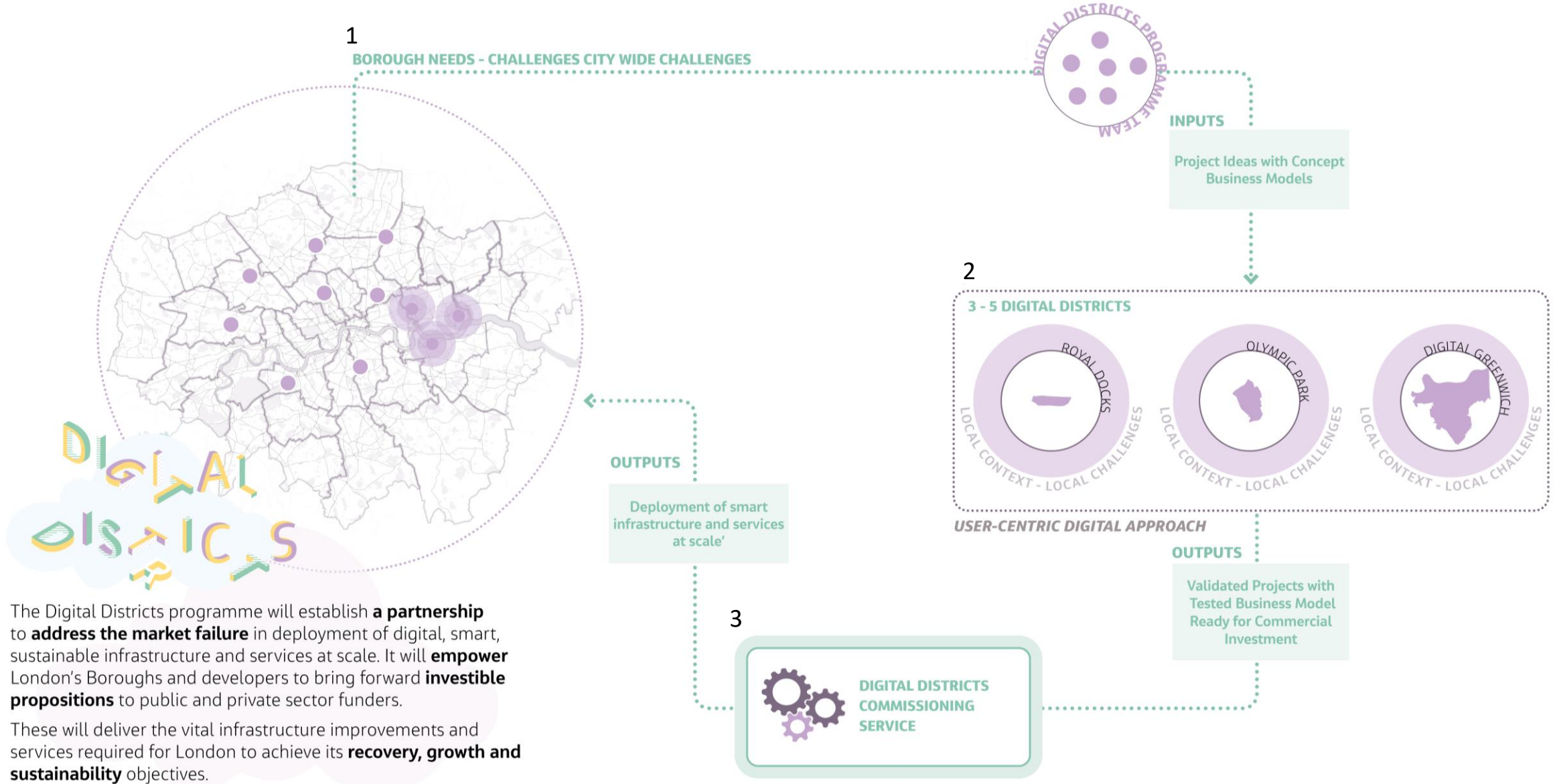# Digital Districts Concept – building on a proven model

1 BOROUGH NEEDS - CHALLENGES CITY WIDE CHALLENGES

DIGITAL DISTRICTS PROGRAMME TEAM

INPUTS

Project Ideas with Concept Business Models

2 3 - 5 DIGITAL DISTRICTS

ROYAL DOCKS — LOCAL CONTEXT - LOCAL CHALLENGES

OLYMPIC PARK — LOCAL CONTEXT - LOCAL CHALLENGES

DIGITAL GREENWICH — LOCAL CONTEXT - LOCAL CHALLENGES

USER-CENTRIC DIGITAL APPROACH

OUTPUTS

Validated Projects with Tested Business Model Ready for Commercial Investment

OUTPUTS

Deployment of smart infrastructure and services at scale'

3 DIGITAL DISTRICTS COMMISSIONING SERVICE

DIGITAL DISTRICTS

The Digital Districts programme will establish **a partnership** to **address the market failure** in deployment of digital, smart, sustainable infrastructure and services at scale. It will **empower** London's Boroughs and developers to bring forward **investible propositions** to public and private sector funders.

These will deliver the vital infrastructure improvements and services required for London to achieve its **recovery, growth and sustainability** objectives.

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Horizon 2020
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