

Better Future

A Route Map to Creating a
Cleantech Cluster in London





London Sustainable Development Commission (LSDC)

The Commission was established in 2002 to advise the Mayor of London on ways to make London a sustainable, world-class city. The Commission is an independent body challenging policy makers to promote a better quality of life for all Londoners, both now and in the future, whilst also considering London's wider global impacts.

The current focus of the Commission is to support accelerated growth of decentralised energy, cleantech and the circular economy in London, as well as embedding sustainability innovation in the development of opportunity areas in the city and showcasing examples of sustainability in action.

The Commission is made up of individual experts from the economic, social, environmental and London governance sectors. Commissioners give their time voluntarily, promoting sustainable development, embedding sustainability into London-wide strategies, and helping make sustainability a meaningful and understandable concept for all Londoners.



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Foreword

At the COP21 Paris Climate talks, the world agreed to attempt to stop global average temperatures rising by more than 1.5°C. The scale of this challenge is huge, but so is the opportunity. Fast innovation, rapidly deployed, will help us reduce our emissions and adapt to the impact of climate change.

Cities will play a crucial role in this. As the great concentrators of humanity, they are on the one hand the main driver of climate change and most at risk because of it; and on the other, the best equipped to solve the challenges it brings and create new economic growth as a result.

My organisation – the London Sustainable Development Commission – recommends to the Mayor that we work together to create a ‘Cleantech Cluster’ at Old Oak and Park Royal (OOPR). This Cluster will aid London to best take advantage of the opportunity to help solve some of the world’s greatest climate challenges while also creating a wealth of benefits for London.

This report summarises the case for supporting this cluster of future oriented and problem solving environmental enterprises, and examines the location we’ve identified as the best opportunity for making fast progress. This report also includes our recommendations for next steps.

Why London?

London has finance, business innovation, excellence in science and technology, a world-class design and creative industry, high-tech brilliance, respected professional services, and the ambition that comes from a growing megacity that attracts talent from all over the world. London has what it takes to become a global leader in our transition to a more resilient, sustainable, vibrant global economy.

Although the capital has the UK’s greatest concentration of green businesses, with a growth rate of 6% p/a, it is growing at just over half the global rate. One reason for this is that the sector is spatially dispersed and therefore gaining none of the well-known benefits to growth of clustering.

Our key proposition is for London to generate that cluster, creating a strong, creative focus for London’s drive to a low-carbon future.

Where in London?

We would build this cluster around a unique set of opportunities that now exist in West London. The development of a major innovation campus by Imperial College at White City and the simultaneous redevelopment of Old Oak and Park Royal into a smart and sustainable district. Bringing together Europe’s top technical university and Europe’s largest urban redevelopment has the clear potential to provide a home of global significance for the cleantech sector in London.

Once Crossrail and HS2 are complete in 2026, along with the links to Heathrow and the motorway system, this cluster will be positioned in the midst of the best communications and transportation infrastructure in the UK. This will provide an internationally connected showcase and focus for not just London’s cleantech sector, but that of the UK.

How clusters work

Imagine the scene. A eureka moment in a lab in Imperial College is moved to an Imperial White City Incubator. It is rapidly tested and developed to the point where it earns first round finance. It moves from the incubator to a business growth hub in Old Oak, where it draws upon a range of services and is inspired by other related entrepreneurial businesses. Prototypes can be made in the same zone to prove market demand exists. This is the potential of a cluster.

If our vision is realised, we can create a cleantech accelerator to take the best inventions and turn them into investible enterprises. And we can establish incubators that support these enterprises in early life and then take them through the highest risk growth phase to the point where they can access substantial and growing markets. This will also lead to improved employment prospects for a range of skills and age groups.

Our Cleantech Cluster plan

We propose that the Mayor should appoint a Cleantech Cluster Lead to drive and coordinate the four key steps that will launch London's Cleantech Cluster:

1. Launch a Global Cleantech exhibition or festival in 2018
2. Create a cleantech accelerator
3. Establish a cleantech incubator
4. Form an early stage manufacturing centre

For the long term success and prosperity of the Cleantech Cluster we recommend the following actions:

- To both attract finance into the Cleantech Cluster and support the activities of its innovation community
- To engage the cleantech innovation community in the development of Old Oak and Park Royal as a world-leading smart and sustainable district
- To work with national government in developing this Cleantech Cluster as a key hub for cleantech in the UK

In conclusion

Of course, there are many other things we can and should do to encourage the growth of the cleantech sector in London but the key objective for London should be to establish a cluster. This is a project that requires the convening power and political encouragement of the Mayor to be brought to fruition.

We are confident that our selected site, which has a great history of engineering excellence and outstanding geographical positioning today, can become a home for a globally significant innovation cluster capable of attracting the very best enterprises to lead the next technological and industrial transformation of our economy in London and beyond.

Rt Hon Lord Barker of Battle

Chair, London Sustainable Development Commission



Executive Summary

The London Sustainable Development Commission (LSDC) recommends to the Mayor the establishment of a Cleantech Cluster of businesses in and around the Old Oak and Park Royal Development (OPDC).

In a post-Paris COP 21 context this recommendation is both timely and important. It sets an historic precedent, outlines bold ambition and offers real, practical pathways and solutions towards a dramatically different carbon future.

The development of this cluster will help London meet its commitment to become a low-carbon resilient city. It will put the city in charge of shaping its destiny and creating substantial and sustainable economic prosperity from this transition. If we act now to create a focus for this cleantech development, it will put London in the vanguard of global cities driving the urgent low-carbon transition at scale. By acting decisively, London could double current growth rates in the cleantech sector to become a pioneering world-leader in much needed low-carbon economic growth.

London already represents a quarter of the UK's activity in the green economy and this expertise is at the core of its potential to grow a Cleantech City. It also has the money, intelligence, skills and professional support to attract global talent and make itself the pre-eminent global centre for cleantech. This is a prize worth fighting for that will help put the capital on the right side of climate history.

The cluster needs the following three key facilities to catalyse its development:

1. An accelerator to take the best inventions and transform them into investable enterprises.
2. An incubator that supports these enterprises in bringing their businesses into the growth phase.
3. An early stage manufacturing centre to support and prove the manufacturing capacity of these cleantech enterprises.

The LSDC is extremely excited by the prospects and potential of West London as the prime location for this proposed development.

There are four reasons why we have identified OPDC and the neighbouring Imperial White City (IWC) development as a unique opportunity for creating a world-leading cleantech cluster.

1. OPDC is Europe's largest urban development with sustainability written into its vision.
2. IWC will become a world leading research and innovation campus.
3. Imperial College London and Climate-KIC UK are world leaders in Cleantech start-up creation.
4. OPDC will be in the midst of the best communications and transportation infrastructure in the UK

The LSDC encourages the GLA and Mayor to:

- Bring together key businesses, knowledge institutes and governmental bodies in order to build momentum for the Cleantech Cluster. In particular to help establish the 2018 exhibition, the accelerator, incubator and manufacturing centre and to promote the London Cleantech Cluster model national and internationally.
- Start to better align the policy and funding priorities of key London stakeholders to support the delivery of the Cleantech Cluster. In particular to mobilise funding flows towards Cleantech and to create conditions that encourage the sector to establish themselves within the Cluster.
- Engage national government to support the Cleantech Cluster and exploit its London-based advantages in developing the UK's presence in this sector. In particular to consider the creation of a Cleantech network with a major hub in London (perhaps pursuing the Catapult model or Mission Innovation funding).

Introduction

Climate change is simultaneously one of the greatest challenges and one of the greatest opportunities that London faces in the 21st Century. We are the generation that must lay the foundations for a radical reinvention of our economy. The time is now.

The climate change challenge for London

London is one of the world's greatest cities. It is home to some of the world's most talented citizens – leaders in creativity, design, knowledge production, technology, banking, finance and commerce. Its population is also growing faster than ever before and, to stay great, the quality of life its citizens experience must continue to evolve and improve.

Unchecked climate change will bring rising sea levels and extreme weather events to London's doorstep. Furthermore, the indirect threats to the city's supply chains will make it extremely hard to maintain, let alone improve, quality of life.

London's challenge is therefore to both reduce the greenhouse gas emissions it directly and indirectly causes, and to prepare itself for the direct and indirect effects of a warmer climate.

Following the historic Paris Climate talks at COP21 the world has agreed to create a low-carbon future. Specifically, this means stopping fossil fuel carbon emissions by the second half of the century and attempting to stop average global temperatures rising by 1.5°C. The scale of the challenge is huge and clearly we must do better to meet these targets. To succeed we will need new innovation to mitigate and adapt to climate change, and fast.

The opportunity

London has what it takes to address the challenges of climate change. This is the opportunity that the Better Future project seeks to take full advantage of. We are simply recommending that existing assets are harnessed, focused and worked hard for maximum value and return.

London has the people, the capital, the global connections and the influence needed to drive a sustainable and resilient, low-carbon economy. It also has a few unique strengths that we must capitalise on to make the transition. These include:

- Its leadership of the UK's green economyⁱ
- Its high concentration of inventive and entrepreneurial talent
- Its world leading position in finance and commerce
- Its world class knowledge institutions
- The significant size of its own market and global reach
- Its growing experience of delivering low-carbon, sustainable infrastructure – like the 2012 Olympics and Crossrail.

Accelerating towards
low-carbon economy

The low-carbon economy will be one of the biggest global growth sectors in the 21st Century. As it addresses the existential challenge of climate change for civic society, low-carbon innovation will transform cities. This means its products and services will dominate the world economy.

The evidence for this already exists: with an average global growth rate of 11.3% p/a since 2008, the green economy far exceeds average global GDP growth of 3.3% in the same period. According to recent calculations it is already worth \$5tnⁱⁱ, or 4.7% of global GDP.

In 2015, we recorded significant shifts in investment from fossil fuel businesses to low-carbon ones. The United Nations Environment Programme calculated that we need to invest 2% of global GDP per annum to make this transition happen in time to avoid dangerous climate change. Crucially this will actually save us money in the longer term as the costs of climate inaction start to bite.

London's low carbon economy already generates around £30.4bn. Some 10,900 businesses employ 192,416 people, which is driving a sector that is currently growing at a rate of 6% p/a (see appendix 1).

However, although this rate shows the potential, it is falling short of global growth rates by a factor of two. For London to remain a globally relevant city it must become a major player in this economic and societal transformation. We want London to achieve a growth rate in excess of 12% - a realistic and important target. **We want to lead not lag behind.**

London's
challenges and
opportunities:

- London's population is expected to rise by 37% from 2011 to 2050, with a resident population of 11.3 million by mid-century.
- Existing housing is the single greatest contributor to London's carbon emissions and the largest user of its public water supply. Reducing these emissions is crucial to tackling climate change.
- London has approximately 3.2 million homes. Many of these were built using outdated environmental standards, and 70% of them will still be with us in 2050. We need to retrofit these properties to reduce their emissions and make them more liveable in a changing climate.
- London needs to build 49,000 new homes a year to meet both the growing demand for housing and the existing backlog.

Meeting London's
commitments



The Mayor of London has already set a series of ambitious targets for the capital. These are designed to create the drivers for addressing climate change and creating economic growth through low-carbon innovation.

These targets are:

- A 60% reduction in London's carbon emission by 2025; 80% by 2050
- Ensuring 25% of London's energy is delivered through more efficient decentralised production by 2025
- Improving the energy efficiency of London's homes and buildings
- Reducing emissions from transport
- Increasing carbon efficient waste and recycling infrastructure
- Capturing the environmental and economic benefits of making London a low-carbon city
- Increasing resilience.

Old cities, like London, usually evolve without plans for the efficient integration of their infrastructure; it's not surprising that so many of London's commitments are concerned with improving efficiency. The good news is, there are potentially huge energy efficiency savings to be made through systemic infrastructure innovation. The Mayor's London Infrastructure Plan 2050 is the first ever attempt to identify, prioritise and cost London's future infrastructure. It considers how we might deliver and fund it, in order to support future growth.

London is also the global home of the finance and insurance sectors, which suggests a further role for the city in addressing climate change. The Governor of the Bank of England has pointed to both the physical and transitional risks to insurance liabilities, and financial asset values because of climate changeⁱⁱⁱ. The drive to secure asset values and minimise insurance risk is already creating collaboration between climate science and the insurance sector^{iv}. London is the obvious home for this kind of collaboration, and would reap the rewards in planning for its own adaptation to climate change.



Creating London's Better Future

For London to remain a world-leading city, it must be in the vanguard of those shaping a low-carbon and resilient future. We will not achieve the step-changes we need through policy and legislation alone.

We propose the establishment of a Cleantech Cluster that can create a focus for London's green economy and, by addressing London's climate change challenges, accelerate green economic growth.

This requires two areas of geographical development. First, the transformation of Old Oak and Park Royal (OOPR) areas of west London into a smart and sustainable district. And second, an accompanying development of the neighbouring Imperial White City campus (IWC) into a science and innovation campus.

Given all the positive factors highlighted above and further in this report, the LSDC believes that London has the potential to become a world leader at creating the businesses that will tackle some of our greatest climate challenges.

Imperial College London



The Vision: Creating a Cleantech Cluster in London

What is Cleantech?

Cleantech usually refers to technology for low-carbon, renewable energy. In this report we use the term to cover technologies that address the causes and effects of climate change via:

1. Low-carbon energy
2. Energy and resource efficiency
3. System efficiency
4. Climate change resilience
5. Greenhouse gas removal

Why Old Oak Park Royal and Imperial West?

London's low-carbon businesses are currently scattered across the city. This means they are missing out on the benefits that have been observed for other clusters – such as Tech City at Old Street, Med City at King's Cross, the financial district of the City of London, Olympicopolis in East London and the museum district in South Kensington.

We considered a number of possibilities when examining the potential locations for a Cleantech Cluster in London, including East London, South London, and other Opportunities Areas.

However, only one location had all the right ingredients for success, including: ready land for redevelopment, good transport links within and out of London, close proximity to a world-class academic institution with cleantech expertise, low rents for start-ups, and nearby industrial land for small-scale manufacturing.

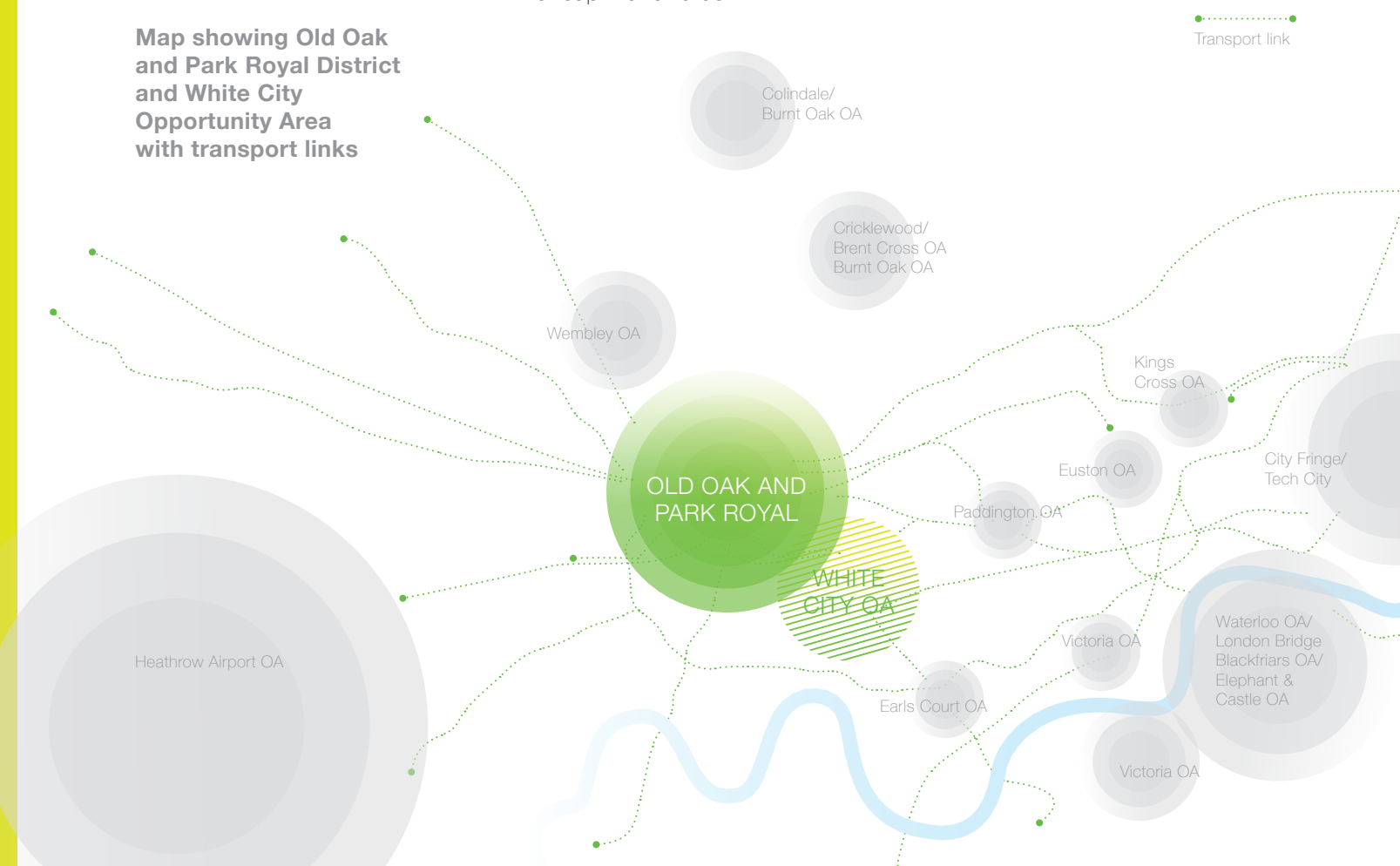
West London has all of these. Specifically, the new Mayoral Development Corporation (OPDC) see appendix 2 set up in April 2015 at Old Oak and Park Royal and Imperial College's new White City Campus site just to the south. (see map on page 15)

Our view is that the centre of gravity for London's Cleantech community should be located in and around the OOPR district where there is room for growth, proximity to a new world-leading research and innovation campus and a transport hub that connects innovation across the UK to the rest of the world. This is the unique potential of this part of London and as it develops over the coming decade it will become the place that the local and global Cleantech community congregates to do business.

Small Cleantech and low carbon clusters are already emerging in other parts of London e.g. Haringey, Bermondsey and Brixton. Their emergence has been organic and driven by local need and advantage, but not by a coherent strategy whose aim is to create an environment in which world-class, high growth businesses can establish. This is the objective of the West London Cleantech Cluster. It will support the entirety of the London Cleantech community by harnessing world-class technical, financial and business expertise and directing it toward the development of the sector. It will also be a stage on which the UK Cleantech sector can engage with the world, finding technical, financial and business partnerships to accelerate growth.

London needs to grasp this opportunity now. It will take time to grow the cluster but leadership in driving the world to a new low-carbon economy is a prize that will not wait. London will need to be agile, creative and committed to set in motion the creation of this Cleantech Cluster if it is to reap the rewards.

Map showing Old Oak and Park Royal District and White City Opportunity Area with transport links



At the LSDC, we feel that London has the ability, space, talent and know-how to create a world leading cleantech innovation cluster in West London. This cluster would be grown through two developments:

The Old Oak and Park Royal District (OPDC)

- London's Smart and Sustainable District
- Scale and connectivity

The Imperial White City Campus (IWC)

- London's technology innovation campus
- World-leading cleantech invention and acceleration^v

The power of clustering

Although there are many policies and regulations that could encourage the growth of the cleantech sector in London, the most important thing we can do is develop a cluster. This will be a project of many partners and the convening power and political encouragement of the Mayor will be the motor that drives its creation and development.

The benefits of hi-tech clustering are well documented^{vi}. If we recognise these benefits, we can use them to achieve a critical mass that will create growth in London's cleantech sector. They include:

- **Increased levels of expertise.** Due to their physical proximity, companies can learn from each other and gain a deeper understanding of their supply chains.
- **Pool of complementary skills.** Companies in a cluster can pull together resources to approach more complex projects that wouldn't be possible as individual units.

- **Economies of scale.** Clusters can pull together demands for various raw materials to benefit from economies of scale in purchasing and to attract bulk discounts.
- **Improved information flow.** Opportunities for face-to-face interactions improves information flow, helping innovators access the latest technology and market information, rapidly and efficiently.
- **Development of infrastructure.** Technology clusters lead to the development of physical infrastructure, such as communications and transportation facilities, as well as support services such as professional, legal and financial.

Learning from other clusters

There are plenty of innovation clusters that we can learn some important lessons from (see appendix 4 for examples).

- While successful clusters can originate from government, university and corporate initiatives, the start-up community is the real engine for formation.
- Clusters typically come from existing regional strengths that provide pre-competitive advantage in emerging sectors.
- The value of a cluster derives from its ability to be a community of collective learning, where formal and informal interactions between sectors accelerate innovation and enterprise creation.
- Clusters are hotspots for international networks that enhance its impact.
- It is of pivotal importance for successful clusters that they retain connection and co-location with their graduates. These individuals are the basis for the community of support and expertise of the ecosystem.

The time is right for London's Cleantech Cluster

London is not unique in its lack of a Cleantech Cluster; indeed there is currently no recognisable world-leading centre for cleantech innovation. This presents London with a brilliant and timely opportunity. A unique chance to lead.

Cleantech start-ups need access to three things: workshops, physical test spaces and early stage manufacture. According to a recent London Enterprise Panel Report^{vii}, this makes the outer London Boroughs ripe for cluster development. The development of the IWC science and innovation campus could be an intellectual and creative seed for a Cleantech Cluster that spreads out into the neighbouring development at OPDC. The Mayor has publically recognised the potential of these two developments to stimulate low-carbon growth.

“It’s vitally important that world cities unite and work together to mitigate climate change. London’s thriving green economy is worth over £30 billion and we are a leading centre of innovation; with the entrepreneurs, technical ability, academia and engineering to drive the transition to a low carbon economy. We’ve proven in the capital that unprecedented population increases are no barrier to reducing carbon emissions and I look forward to discussions with my fellow mayors that help deliver a positive environmental impact.”

The Mayor of London, Boris Johnson

The time is right for London’s Cleantech Cluster

In a recent press release for COP21:

“The Mayor will share plans to expand the clean tech research and innovation at Imperial College to include a new leading green research and innovation campus at Imperial White City. He is also backing an Old Oak and Park Royal Development Corporation feasibility study that will consider what support is needed for a centre of low carbon industries and employment at one of UK’s biggest regeneration sites at Old Oak. The Mayor would like the three sites to form a world leading innovation hub that nurture the best green business ideas and transforms and supports them into investable enterprises.”

Together with the Climate-KIC, Imperial College is developing a business model to establish a cleantech innovation centre at IWC that takes the earliest stage of invention through to seed investment.

The Greater London Authority (GLA) and others have developed a proposal to incubate seed invested start-ups through to the growth investment stage.

And in this report, the LSDC proposes the creation of a flexible manufacturing facility to enable cleantech businesses with growth investment to undertake early stage manufacture in London. Such a facility is known as a “proving factory” because it proves a company’s ability to manufacture. This step is where the greatest growth in business value occurs, but one which now rarely occurs in London.

The LSDC believes that establishing three locations for these three phases of start-up growth in and around OOPR and IWC will create a focus for every aspect of London’s low-carbon ecosystem. In turn, this will stimulate

accelerated growth in the sector and catalyse further cleantech clustering in OOPR and neighbouring boroughs.

Furthermore, by providing a ‘stage’ for London’s cleantech entrepreneurs and innovators, London will have created a visible manifestation of its longer-term intentions to become a world-leading sustainable low-carbon and resilient city.

LSDC’s Cleantech Cluster proposal

London needs to focus on the following key issues to create a Cleantech Cluster:

- Providing leadership to gather together London’s cleantech community and its stakeholders
- Attracting patient risk capital finance to support new cleantech ventures into growth
- Mobilising finance to build the proposed Cleantech Cluster
- Developing the right policies and environment for cleantech to prosper
- Developing and making visible London’s identity as the world’s capital for cleantech innovation.

Therefore, we are proposing:

- To turn London into a global destination for cleantech through the establishment of the Cleantech Cluster
- For the Cleantech Cluster to bring action, leadership and coherence to the UK cleantech community around London’s vibrant innovation and financial ecosystem, and for London to become known globally as the place where climate innovation gets commercialised
- For the Cleantech Cluster to act as a catalyst (in addition to HS2 and Crossrail) for the regeneration of White City, OOPR and its surroundings, by attracting start-ups, knowledge institutions and businesses to the area.

The Cleantech Cluster will be an open and engaging focus for cleantech across London, the UK and the rest of the world. We hope it will act as a potential blue print for other smaller clusters across London and the wider South East. The redevelopment of OOPR, its focus as a major high-speed transport hub, the research and innovation excellence at IWC and the vibrant community of innovators and entrepreneurs will create an environment where national and global players in cleantech want to be. It will be a space where people from all over the world come to see what London is thinking and doing.

The proposal supports the Government’s “GREAT Britain” campaign to power the UK forward in the global race, and its Plan for Growth. It also addresses the challenge highlighted by the Hauser Report^{viii}.

Copenhagen Cleantech Cluster/CLEAN

Copenhagen Cleantech Cluster (CCC) is a consortium of energy companies, research institutions, and governmental and non-governmental organisations. CCC was formed in 2009 and, today, is the biggest cluster project in Europe.

“The evaluation of CCC proves that clusters both work and matter. Rather than having a scenario in which the cluster has to do everything by itself, it’s much better to have clear goals and KPIs and an organizational set-up that enables the stakeholders to work for the cluster and provide shared value.”

Michael Johansen, CLEAN

You can read more about the project evaluation here (<https://regionalt.erhvervsstyrelsen.dk/english>) and visit CLEAN’s website here (www.cleancluster.dk).

The secret to success

The group achieved its goals by focusing on five main areas: facilitation, matchmaking, innovation and entrepreneurship, testing and demonstration, and international outreach. As well as these focus areas, CCC describes the following as fundamental to its success:

- A set of clearly defined and measurable goals
- A decentralised but coordinated approach that empowers everyone to fulfil the mission
- A plan to start attracting international exposure from day one
- The early prioritisation of long-term financing
- A relentless focus on creating outputs
- The development of a comprehensive exit strategy, including a sustainable organisational set-up.

The future of CCC

Originally, CCC was financed with approximately 24 million dollars from the Capital Region of Denmark, Region Zealand and the EU Structural Funds. In May 2014, CCC merged with Lean Energy Cluster to form a nationwide cleantech cluster called CLEAN. With more than 170 members, CLEAN ensures that Denmark retains its leading position as a producer of cleantech solutions in a financially sustainable way.



Amplifying Impact: Clustering in West London

The co-location of SMEs, large corporates, knowledge institutions and government bodies form the key constituents of the best innovation clusters. The performance level of such clusters depends on creating an environment in which these actors can learn from each other and discover and exploit opportunities in partnership.

Why are cleantech start-ups not staying in London?

Although some of the best cleantech start-ups are founded in London and start their life in the city, we know that many leave once they are ready to manufacture. Anecdotally, the reason for this is:

- A lack of affordable space and facilities for manufacture
- A lack of experienced engineers with manufacturing experience
- The lack of local manufacturing supply chains.

The evidence shows that clusters are best built around existing competencies and related activities. Attempts to build clusters around areas of expertise in which a region or city has limited prior experience have been largely futile. Fortunately London and, more specifically London's universities are home to a mix of skills and capabilities.

It is important that we consider which mix of current qualities to build upon, and to assess which of those capabilities might lead to the creation of new sectors and industries that will become dominant in future. This will not be easy to do, but focusing on emergent, pre-competitive activities may ultimately hold the key to building an innovation district in emerging, rather than existing sectors that can compete on the world stage.

We propose the cluster be located in the region circumscribed by the new White City Opportunity Area where Imperial College are developing the IWC campus and the new OPDC district in West London.

The GLA, OPDC, members of Imperial College, Sustainable Ventures, the Carbon Trust, and the Climate-KIC amongst others have started to develop funding bids and plans for refining and testing the first steps in creating this cluster. These include:

- A second phase of development by Imperial College and the Climate-KIC of start-up creation and development to build upon and further improve their Cleantech Acceleration programme. This will be located at Imperial College's White City Campus.

- Development of a system of comprehensive Cleantech incubation support led by Sustainable Ventures and the Carbon Trust and building upon their existing expertise. This will initially be located in Bermondsey and move to West London.
- Imperial College is developing a plan to create a centre for climate change and the environment at the White City Campus where researchers, students, businesses and government can build the ideas and skills to create new Cleantech business. This will underpin the Cluster.

These concepts were presented to the Mayor and, as a result, he has publicly promoted the idea of this part of London becoming a globally leading site for innovation that addresses climate change challenges.

Why West London and OOPR?

Locating around OOPR, London's largest regeneration site, will offer the following:

- Access to an excellent sustainable transport interchange with the development of HS2 and Crossrail, with underground and over ground stations providing access to national and international markets and a skilled labour force.
- Located near and linked to one of the world's best technical universities and accessing the wider London academic community.
- Development space for growth of start-ups and small scale manufacturing.

Additional benefits of locating in London:

- The right time zone.
- World leader in finance and capital. As well as being a major financial centre, London is also a global hub in the fast-growing green finance arena^{ix}.
- Access to investors – London is the second biggest source of capital for cleantech in the world (after Silicon Valley).
- Ease of meeting with overseas customers and partners. High growth cleantech start-ups will need to access overseas markets and often collaborate with large foreign corporates. It is much easier to do this from London.
- London has leading expertise for copyright and patent advice.
- London is an international Intellectual Property (IP) and Legal centre.

Visualisation of future Old Oak and Park Royal Development



Delivering a low-carbon, resilient future for London

London is committed to reducing its CO₂ emissions by 60% by 2025 and 80% by 2050. According to GLA data, two-thirds of London's emissions come from its buildings (36% from homes and 43% from workspace), and 21% from transport.

To achieve reduction targets, London will have to significantly reduce the CO₂ emissions of its buildings. It will also have to decarbonise the energy grid, mainly by establishing a suite of decentralised energy centres that use low and zero-carbon fuels.

In addition, any new development must be either zero-carbon or – even better – enable greenhouse gas remediation. While this is challenging, it's much easier than reducing emissions on existing stock.

Development projects like Old Oak (24,000 new homes) and Park Royal (up to 1,500 new homes) will therefore have to meet CO₂ emission standards never achieved before on a large-scale development in the UK.

The construction of Old Oak and Park Royal will also fundamentally change the local water system, potentially putting more pressure on the already stressed drainage and water supply infrastructure. London is already investing in large infrastructure projects to cope with rising demand for water, increases in flooding and loading of the sewage system. These include the Thames Tideway Tunnel and a highly carbon intensive desalination plant in Beckon.

To avoid stressing these systems further, and to ensure the project is resilient to climate change, the Old Oak and Park Royal site needs a comprehensive and sustainable approach for managing storm water, water supply and water treatment.

It will also need to employ new approaches to waste management, based on a sustainable waste hierarchy. This means diverting waste from landfill and, where possible, ensuring it is either upcycled or reused before it is down-cycled or converted into energy.

**Demand that
stimulates supply**

The demand for carbon positive development and sustainable infrastructure will – at least in part – have to be met by the cleantech sector.

At the OPDC site, these challenges could actually act as a stimulus to bring cleantech enterprises to the district. Approached correctly, the need to deliver technical sustainability solutions could be a key driver of the proposed Cleantech Cluster.

We envisage this will come through:

- Enabling sustainable development in OPDC
- Engagement activities across the whole low-carbon London ecosystem
- Creating a landing pad for low-carbon UK enterprises
- Creating a destination for global players in the low-carbon space.

**A vision to communicate
and focus progress**

An important step to realising the potential of this opportunity is to create a vision for OPDC that has sustainability embedded at its core. This should be similar to the Olympics vision and could act as a powerful driver of innovation and leadership. The LSDC will be seeking to help the OPDC team create this vision, using London's carbon targets and imperative to create a resilient future by 2050 as the opportunities to shape it.

The vision will also allow us to put more emphasis on building cleantech into the development itself and, eventually, to create a 'living lab' to showcase what can be achieved at scale. This, in turn, will act as an exemplar for other future developments across London in the Opportunity Areas set out in the London Plan^x.

Structuring the Cleantech Cluster

When it comes to rapid and successful start-up development, there are three distinct phases to moving an enterprise from invention to a growing business.

FROM INVENTION
TO SEED

FROM SEED
INVESTMENT TO
GROWTH INVESTMENT

EARLY
MANUFACTURING
GROWTH

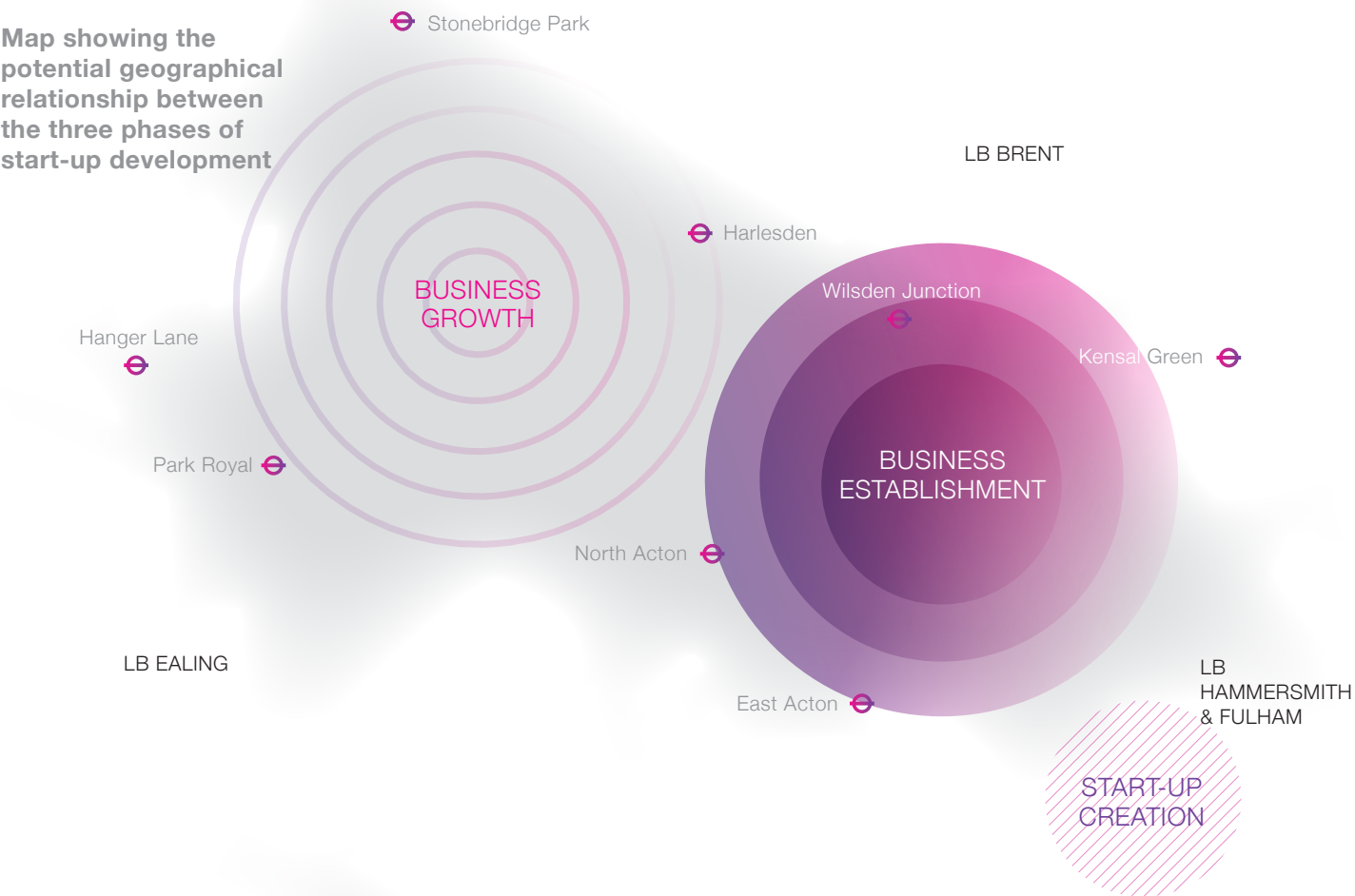
These three stages require three
distinct support environments:

DEVELOPMENT OF
CREATIVITY, BUSINESS
FOCUS, TEAM SKILLS &
INVESTOR PITCHING

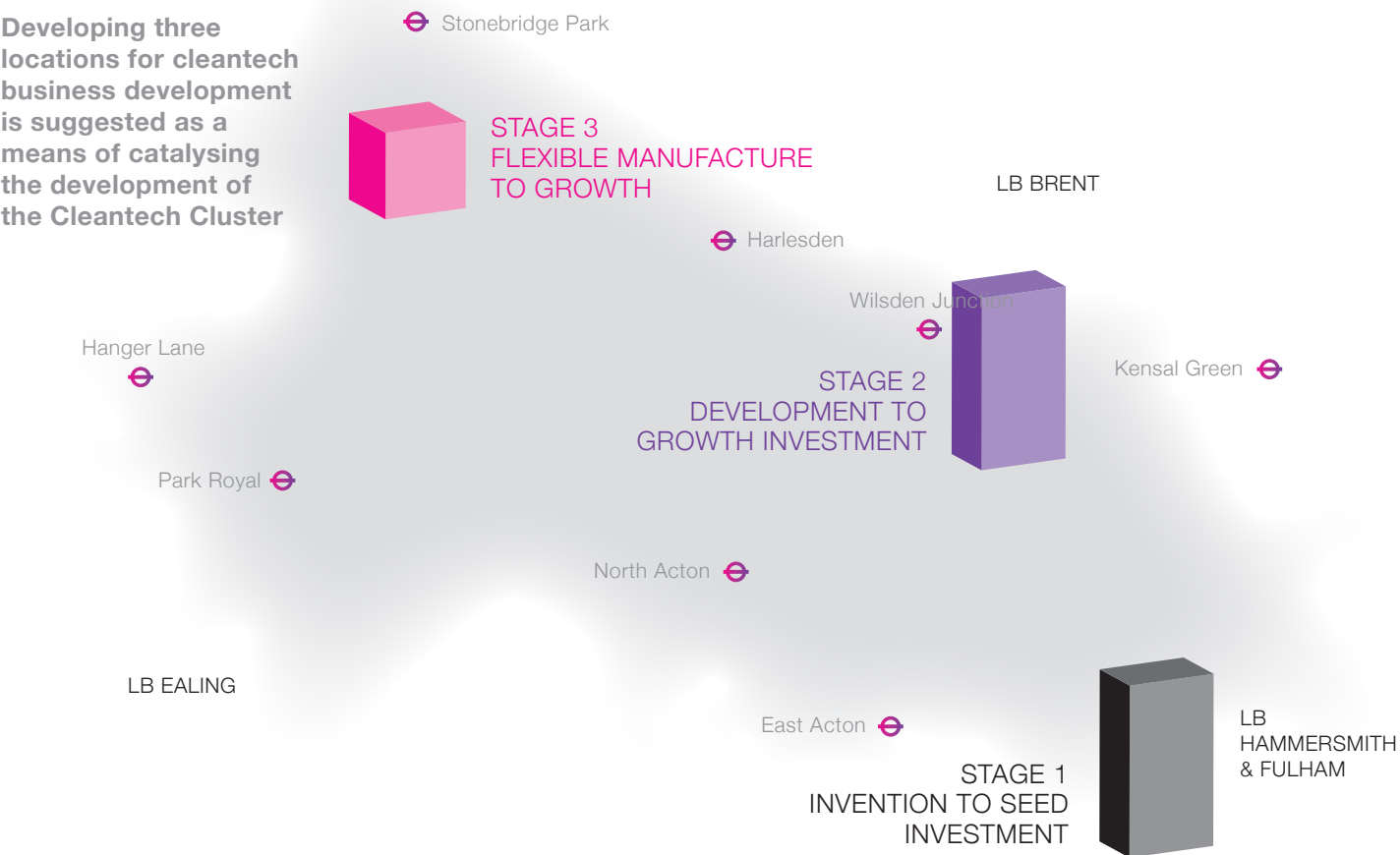
DEVELOPMENT OF
BUSINESS SKILLS,
MARKET AND
PROTOTYPE

DEVELOPMENT OF
MANUFACTURE AND
BUSINESS DELIVERY

Map showing the potential geographical relationship between the three phases of start-up development



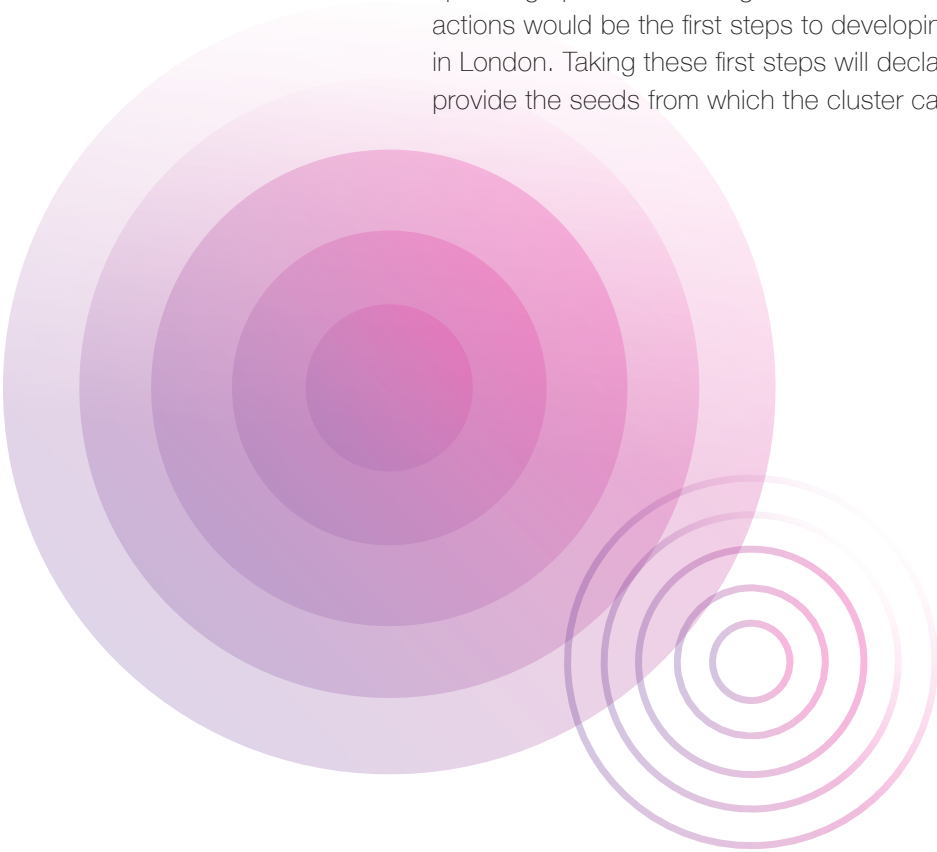
Developing three locations for cleantech business development is suggested as a means of catalysing the development of the Cleantech Cluster



This requirement immediately suggests a geographical location at the proposed OOPR site for each phase.

The development of a Cleantech Cluster at Imperial White City and OOPR would have the potential to transform the economic impact of UK cleantech by bringing all the necessary elements together in a space comparable to that of Silicon Valley, and with the same relationship to a world-class university.

Co-location solves the problem of “dislocation” or “islands of expertise”. It provides teams with focus, speed, alignment and agility – key factors in speeding up and increasing success rates of early stage ventures. These actions would be the first steps to developing a mature Cleantech Cluster in London. Taking these first steps will declare London’s intentions and provide the seeds from which the cluster can grow.



Phase one:
**A cleantech innovation or
accelerator centre at IWC.**

During this phase, cleantech entrepreneurs create and develop inventions in response to challenges and business models, and test them with potential customers.

We propose this first stage takes place at the IWC campus; Imperial College is already developing a model for establishing such a centre. The know-how, facilities and networks of a university and its partners will be very helpful in supporting idea development and the buildup to seed investment.

Phase two:
**A cleantech enterprise
incubator at Old Oak.**

During the second stage of development, a new start-up focuses its resources on building its team, creating strong customer and partner networks and developing a reliable and cost effective prototype that can be manufactured. For this phase, the start-up requires office and workshop space, as well as professional support to accelerate progress to commerciality and growth investment.

Our recommendation for the location of phase two is dependent on our proposed location for phase three. Because business growth for technically innovative enterprises requires manufacturing capacity, we have placed the third phase in Park Royal. It therefore makes sense to locate phase two in Old Oak.

We also propose that because Old Oak is at the heart of the OPDC, this location is also used for working directly with cleantech enterprises at all scales (from SME to large corporate) on making the area state-of-the-art, resilient and low-carbon.

Phase three:
**A flexible manufacturing
facility at Park Royal.**

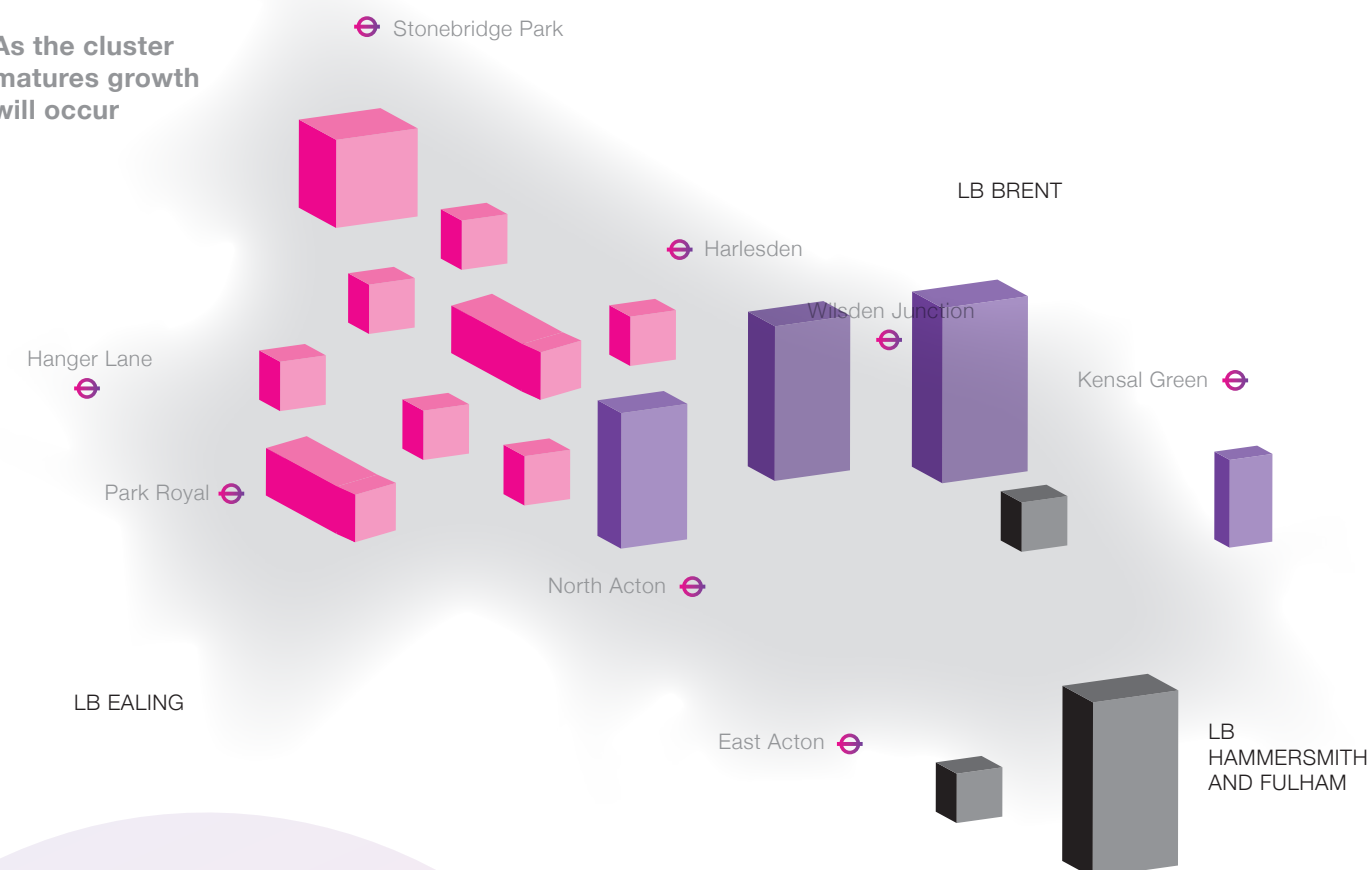
In the third phase of business development, the LSDC is proposing the creation of a 'Proving Factory'^{xi}. This adaptable manufacturing facility will exist to de-risk early stage manufacture for both start-up and investor. Supported by experienced manufacturing engineers, cleantech enterprises can deliver between 10,000 to 80,000 units per year. The intention is to create market confidence in the product, creating expertise in cleantech enterprise that supports accelerated growth.



This proposed geography for the Cleantech Cluster aims to create a distinct sense of place related to each phase of start-up development. The expectation is that this will act as an aggregating influence on the ecosystem as it matures and grows.

The Cleantech Cluster will then serve as an exemplar and 'gathering ground' for other cleantech clusters and actors working across London, the UK and the world.

**As the cluster
matures growth
will occur**



Services and facilities at the Cleantech Cluster

Services and facilities at the Cleantech Innovation Centre

The Cleantech Innovation Centre, Enterprise Incubator and Flexible Manufacturing Facility will provide what the Hauser Report identified as 'translational infrastructure'^{xii}. This kind of infrastructure enables the translation of a brilliant invention into a viable, growing business.

Imperial College is considering a proposal for a centre that would support and accelerate the development of inventions into investable business opportunities.

It would provide the following services and facilities:

- Engagement with demand-side players to drive new invention and innovation.
- Education for sustainable, cleantech innovation and entrepreneurship.
- Advanced hackspace for innovators to develop, test and demonstrate their inventions.
- Support for the teams to develop and test their business model with customers.
- Support for the teams to develop and test prototypes.
- Masterclasses in the essentials of creating a start-up.
- Coaching for team development.
- Networking with the wider community of interest.
- Information and investment forums.
- Innovation and entrepreneurship competitions.

The model being proposed grows out of, and enhances the College's work with Climate-KIC.

This collaboration founded the world's most successful cleantech accelerator, co-developed an education programme that developed over 1,000 cleantech innovators and entrepreneurs, and supported successful, collaborative innovation between large corporates, SMEs and academics. The proposal aims to grow the scope of their collaboration and create a co-location centre that enhances technology invention and translation.

Co-locating cleantech actors and stakeholders will create a focal point and buzz for these early stages of cleantech innovation.

Services and facilities at the Cleantech Enterprise Incubator

The Incubator will be for cleantech enterprises seeking to obtain early stage growth investment. They will have their own seed funds and be seeking to establish their business' credentials through the development of their business team, its links to potential customers and the developing a prototype that can go into production.

The Incubator would provide the following services and facilities:

- Offices, meeting rooms, workshop and communal space
- Business coaching
- Investment and funding expertise
- Design and engineering advisory services
- Technical due diligence services
- Shared business support services, e.g. contractual and PR
- Support for engineering and technical staffing
- Investor events that engage the risk venture capital community

To add value to the incubator's activities and enhance its impact on London and the OPDC development, we propose the incubator would provide space for co-location with:

- Enterprises from other innovation clusters in London, the UK and beyond
- Mature organisations that wish to support the growth of the cleantech sector and facilitate its impact on London

We expect this would create new partnerships and markets, and enable OPDC and other London developments to access and work with cleantech innovation partnerships to deliver London's low-carbon goals.

Services and facilities at the Cleantech Flexible Manufacturing Facility

Setting up and acquiring competency in manufacturing is a critical step for cleantech enterprises. It is also where real value is created in the company. To support those cleantech enterprises that have won growth investment and plan to set up their own manufacturing, we propose the development of a flexible manufacturing facility^{ix}.

This facility would provide the following facilities and services:

- Support from a team of experienced manufacturing experts.
- Space in which to set up early stage manufacture of 10,000-80,000 units per annum
- Training for staff in manufacture.
- Services to optimise manufacture processes.

The purpose of this support is to provide assurance to growth investors, deliver reliable manufacture to customers, and grow manufacturing competence in the cleantech business. The facility is only intended for use in the early stages of business growth.



Attracting support and launching the Cleantech Cluster

We propose that the Mayor appoints a Cleantech Cluster Lead to establish the cluster. As part of wider work to identify growth sectors to nurture and attract to the area, OPDC will be undertaking a feasibility study exploring the OOPR as a centre for cleantech activities, to boost London's economic growth. The lead will be able to initiate the launch of the Cleantech Cluster through the following steps:

- The development of a Global Cleantech Festival or Exhibition in 2018.
- A competition to design the Exhibition space and its conversion into the Cleantech Business Incubator.
- A competition to design the Cleantech Flexible Manufacturing Centre.
- Attract key 'anchor businesses' to locate at OOPR to catalyse interest and drive development.

The Global Cleantech Festival or Exhibition

Further stimuli to the early development of the Cleantech Cluster and its association with the development of OOPR might be coupled to these launching activities. For example:

- Running a programme for innovation in sustainable resource management in conjunction with OPDC, the LEP, LWARB and others.
- Setting up cleantech competitions with DECC, Innovate-UK and organisations such as the Climate-KIC that address urban challenges and enable piloting and demonstration.
- Running competitions to address London-specific cleantech challenges.

This event would invite the best cleantech innovations from around the world to exhibit and demonstrate their technologies. It would put London and the OPDC on the map.

The context of the event would be around exploring OPDC's journey to becoming a beacon for sustainable city development, and juxtaposing its challenges with those experienced in other low-carbon and resilient cities. The Old Oak and Park Royal district already has a long history of hosting large scale exhibitions^{xiii}. The proposed 2018 Exhibition would last a few years and comprise a series of events to appeal to businesses and the general public. The event programme would attract existing cleantech businesses to the Cleantech Cluster and help catalyse its formation.

The Global Cleantech Festival or Exhibition

The Festival or Exhibition would:

- Aim to target selected cleantech companies with the aim of attracting them to the Cleantech Cluster
- Bring cleantech innovation opportunities to the OPDC development at an early stage in its development
- Provide a view of the future of 21st Century cities and open up a public debate on the issues
- Bring existing cleantech events (national and global) into the Exhibition events calendar and raise the initiatives profile
- Engage leaders in the cleantech field in shaping and delivering the events programme.

The event programme would have a clear legacy. For example, the exhibition spaces could be reusable and even transferrable, and could have an ongoing role in PR. In particular, the Exhibition space(s) on the OPDC site could be designed to subsequently provide an interim location for the cleantech business incubator. A focus on legacy would build on London's reputation for this type of thinking.

Design competitions

The Exhibition/Business Incubator and Flexible Manufacturing spaces should be iconic examples of modern low-carbon buildings that combine aesthetic value and engineering excellence. We propose that the design of these spaces could be the subject of a high profile international competition. This would put the Cleantech Cluster in the public eye and create a visual and technical legacy for its further development.

Attracting anchor businesses

Many of the world's most successful clusters were developed through the colocation of key anchor businesses, which acted as catalysts to start ups and the wider supply chain.

The LSDC has already spoken to a number of relevant potential anchor businesses who would be interested in becoming pioneers in the cleantech hub. These include NGOs, start-ups and larger businesses.

Encouraging cleantech growth



As well as support and finance in their early stages of development, we have identified several key components that cleantech start-ups need to grow their businesses. We of course recognise that the issues we highlight below are relevant not only to attracting cleantech businesses to London but also to many other sectors. We also recommend a survey of existing policy approaches for encouraging cleantech development as potential models for London.

Encouraging cleantech growth

The issues we highlight below are relevant to attracting cleantech businesses to London but also apply to many other sectors.

- Affordable housing
- Affordable business premises
- Access and parking
- Supply chain
- Talent and skills
- Policy drivers and tools

Looking at examples from across the UK, Europe and the world, we feel that a number of policy drivers and mechanisms could be used to encourage the Cleantech Cluster to form.

Other governments and cities are already starting to support the cleantech sector. The Department of Enterprise, Trade and Investment (DETI) has researched the incentives used to stimulate innovation in economic growth (including in the cleantech sector). The resulting list is very comprehensive and shows what may also be possible in London^{xiv}.

What the Scottish government offers

- Co-ordinated support for businesses and academia in the environmental and clean technologies sector, to maximise opportunities in a market potentially worth £12 billion to Scotland's economy.
- Channelling innovation support to low carbon technologies where there is the greatest chance of commercial success. The Scottish government will reprioritise £15 million of innovation funding from the Lowlands and Uplands European Structural Funds Programme, which, along with match-funding from the private sector and other public sector funders, could create £60 million of support for low carbon activity.
- Supporting the planning, design and construction of new infrastructure and the retrofit of existing facilities to support low carbon activity, such as renewable energy and electric vehicle infrastructure.
- Supporting skills development through the Low Carbon Skills Fund and working with partners and employers to predict and respond to future skills demands.
- Holding an annual Scottish Low Carbon Investment Conference, with next year's focus being investment for resource and energy efficiency.



The opportunity

Engaging with the development of the Cleantech Cluster through the LSDC is an opportunity to:

- Shape and develop the GLA and OPDC's vision for the Cleantech Cluster from the beginning
- Help create an environment for entrepreneurs to flourish
- Invest in cleantech start-ups from early to growth stage
- Be one of the first to locate in the Cleantech Cluster and benefit from its services
- Mentor and help new start-ups

If you are interested in finding out more and meeting with the LSDC and its partners, please contact:

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lsc@london.gov.uk
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Appendix 1

The facts and figures

Current rates of growth indicate that the size of the Low Carbon & Environmental Goods and Services (LCEGS) sector in London will be £40 billion by 2020 and £53 billion by 2025, with an increase in employment of about 40,000 jobs.

In its Green Means Business report^{xv}, the LSDC set out its belief that London should aim for a growth rate in the Low Carbon and Environmental Goods and Services sector to exceed the current projected growth forecasts for the sector.

The cleantech market is a major opportunity for economic growth. Since 2007, the global market has grown at 11.8% pa – it is now worth between \$4-5 trillion and is set to double within 10 years, according to a study for the German Government and last year's Climate Economy report written by the Calderon Commission^{xvi}.

These figures show that the UK's growth rate is slower than the international average. If our ambition is to be a world leading city, it is important that London also leads in its scale of ambition for its cleantech sector. This all suggests good potential economic and employment opportunities for London from this sector.

London's Green Economy 2014/2015^{xvii}

£30.4bn

SALES

Five sub-sectors
account for 66%
of total sales

6%

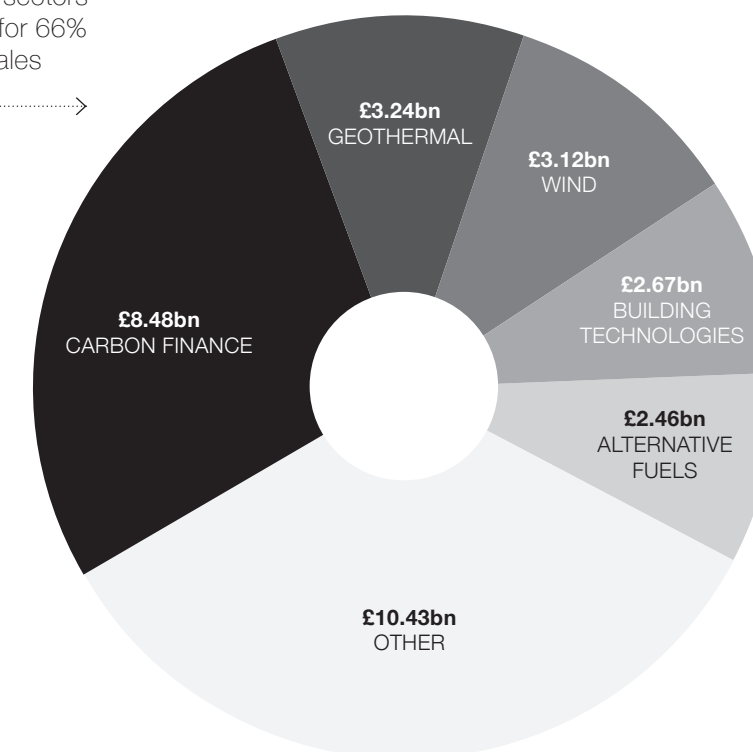
YEARLY GROWTH RATE

10,900

BUSINESSES

192,416

EMPLOYEES



Appendix 2

Partner Organisations

Imperial College (IC)

Imperial College London is one of the world’s great universities. It is the only university to focus exclusively on science, technology, engineering, medicine and business. It provides a critical mass of outstanding research expertise, which is the bedrock of high-quality innovation and enterprise.

Imperial White City (IWC), Imperial College’s new campus, is providing a new approach to innovation and entrepreneurship.

The combination of Imperial College’s record in innovation and its intention to embed cleantech piloting and demonstration at Imperial White City is a unique opportunity to gather and shape a world-class ecosystem around the site.

Imperial College is developing a plan for such a hub, which focuses on climate change and the environment where research, education, policy innovation and business will co-locate and work in multidisciplinary collaborations.

A team from the Grantham Institute at Imperial College is working with the OPDC to create a satellite site for acceleration that is hoped will act as an early precursor and stimulus for others.

Through their experience of running Climate-KIC UK, Imperial College has developed world-leading expertise in climate innovation. Climate-KIC is the world’s largest initiative to address the challenges and opportunities of climate change. Co-founded by Imperial College London in 2010 its UK arm has become the world’s most successful Accelerator of Cleantech start-ups with a record of:

- 80% of start-ups have won \$2M or more of seed funding on exiting their pipeline;
- Created an average of 9 new jobs each, this represent a return of £12 private investment for every £1 of public funding used. The student numbers now trained is over 1500 and around a quarter have gone on to create their own start up.
- Bringing together leading climate scientists and insurance majors to create a business that improves insurance of weather extremes;

Climate-KIC UK brings together scientists, engineers, designers, students, start-ups and big business – but not on the scale required for London to make a statement on a global scale, nor on the permanent basis that a Co-Location Centre would provide.

www.imperial.ac.uk

**Old Oak and Park Royal
Development Corporation
(OPDC)**

Launched on 1 April 2015, the OPDC’s purpose is to use the once-in-a-lifetime opportunity of investment in HS2 and Crossrail to develop an exemplar community and new centre in north-west London, creating opportunities for local people and driving innovation and growth in London and the UK.

The OPDC will be looking to:

- CREATE: a successful and inclusive neighbourhood of 24,000 new homes at Old Oak and 1,500 new homes at Park Royal
- CONNECT: this new neighbourhood into the wider local, regional and national transport network using High Speed 2 and other public transport infrastructure to drive regeneration
- COMMUNITY: promote economic growth to provide 55,000 new jobs at Old Oak and 10,000 new jobs at Park Royal and work to ensure local communities and businesses benefit
- CONSOLIDATE: and Regenerate the Park Royal as the UK’s leading industrial area, enhance the Grand Union Canal and protect Wormwood Scrubs

Appendix 3

High level Time Line

Activity	Detail	Date	Lead	Cleantech Route map impacts
Communication and PR	Announcement at COP21 of London's intent	Dec 2015	GLA / Mayor of London	Announcement of cluster intentions from all partners
Funding	Decisions on funding bids for initial accelerator and Incubator	2016	GLA/ ERDF	First physical manifestation on site if bids successful - in 2016
Low Carbon Feasibility Study	Confirm funding for feasibility study	Early 2016	GLA / OPDC	
	Choose consultants	Summer 2016	OPDC	
	Feasibility study delivered	Dec 2016		
	Develop programme and raise funds	2016-2018	OPDC	
	Start of programme of development dependent on findings	Summer 2018	GLA/ LSDC/ OPDC	
OPDC	OPDC draft Local Plan publishes for first consultation	Feb 2016	OPDC	Input cleantech into OPDC vision
	OPDC draft Local Plan publishes for second consultation	Summer 2016	OPDC	
	OPDC Draft Local Plan Examination In Public	Winter 2016	OPDC	
	OPDC draft Local Plan Adoption	Spring 2017	OPDC	
OPDC Development trajectory	Majority of Old Oak North & North Acton	Pre-2026	OPDC	
	Old Oak South and HS2 Construction sites	Post 2026	OPDC	
	Envisaged end of development	2040-2050	OPDC	
Imperial College	Completion of White City Campus	2015-2045	Imperial College	Cleantech accelerator

Appendix 4

Case Studies

Cambridge

The university initially took a 'laissez-faire' attitude to the valorisation of university knowledge. This led scholars to characterise the cluster as a grassroots development, where new entrants, such as Cambridge Consultants, were acting in the face of a hostile university that 'frowned on commerce', as well resistance from the City and County Councils, which 'actively sought to prevent any industrial expansion in Cambridge and the surrounding area' (Kirk & Cotton, 2012).

While this may have been the case early on in the cluster's development, attitudes have since changed. An effective cluster ecosystem has helped to create an enduring sense of community and a powerful networking and support structure, which provides start-ups access to laboratories, technology, skills, office facilities, business expertise, venture capital and financial advice.

Cornell NYC Tech, Roosevelt Island

Cornell NYC Tech is a new graduate school focusing on applied science. It was announced in 2011 that Cornell University and its partner, the Technion Israel Institute of Technology, had won a bid for a new campus on Manhattan's Roosevelt Island. It represents a bold experiment on several fronts: a major expansion for a local university, a high impact real estate venture for Roosevelt Island and an innovative collaboration with a foreign university closely backed by local government stakeholders in City Hall. However, its most significant point of departure is the relationship it intends to build between university and industry; one in which enterprise and education are indistinguishable.

As part of its new framework, the school has pitched itself as an 'educational start-up' where students are 'deliverables', and companies seeking to hire new graduates are clients who can choose from a 'suite of products'. The programme structure is designed to ensure that students carry out industrial placements, whilst their progress is not just supervised by an academic supervisor but also an industry mentor. Colleges and universities in the USA are looking to Cornell as a model for finding new sources of finance for scientific research, as well as a potential model for translational activities.

In contrast to other universities such as Stanford and MIT which seek close ties with industry, in the case of NYC Tech, it is not simply an outcome but the 'founding premise' on which the new campus has been built. According to Cornell President: "The campus was set up specifically to increase the talent pool in New York City... to positively influence the New York City economy".

Mission Bay in San Francisco

Mission Bay is a 300-acre neighbourhood in San Francisco, California. It was created in 1998 as a redevelopment project for a disused rail yard, and has since emerged as a wealthy neighbourhood of luxury condominiums, high-end restaurants and a cutting edge research site, following the establishment of a biotech campus by University of California, San Francisco (UCSF).

San Francisco has since become the centre of biotechnology in the surrounding Bay area. The transformation of UCSF Mission Bay into a thriving biotechnology centre has brought an economic boon for San Francisco, according to an economic impact report released in 2010. UCSF's presence at Mission Bay has enabled San Francisco to attract bioscience back within city limits, growing from one company when UCSF's Genentech Hall opened in 2003, to more than 100 in 2013. The campus is immediately surrounded by a growing and collaborative ecosystem of more than 50 bioscience start-ups, nine established pharmaceutical and biotech companies, ten venture capital firms, and leading scientific institutes, including the J. David Gladstone Institutes, the California Institute for Quantitative Biosciences (QB3) and the Veterans Affairs research centre, all of which are affiliated with UCSF.

Multinationals are attracted by the prospect of collocation with a world-class research university and a network of incubators, partnered with surrounding institutes including UCSF, Berkeley, Santa Cruz (known collectively as QB3) and the California Institute for Regenerative Medicine. UCSF Mission Bay has subsequently emerged as a vital campus and biotech hub, where academia and industry converge. UCSF Mission Bay has a daily population of 4,000 faculty, staff and students including the next generation of basic scientists, clinical researchers, doctors, nurses and pharmacists. In addition, the campus is about to start building a \$1.52bn hospital complex, designed to set new standards in patient care and supporting partnerships between basic science and clinical research.

With the medical centre at Mission Bay, UCSF aims to transform academic medicine in part by translating basic science into clinical practice more rapidly through increased collaboration among scientists and clinicians, accelerating development of new diagnostic and treatment approaches for children, women and cancer patients, and training the next generation of health care practitioners using new tools and technology in facilities that foster teaching and learning.

Shang Hai Knowledge & Innovation Community (KIC)

Shang Hai KIC is a joint venture between Shui On Land Development Ltd (70% interest) and the regional Yangpu government (30% interest), which began in 2006. The vision behind the masterplan was to “eliminate the traditional boundaries that exist between businesses and residential communities, allowing a complete interaction between home and place of work, and to create a haven for entrepreneurial pursuits”. Spanning more than 1 million square metres, the project comprises four core facilities:

- KIC Plaza for office buildings and commercial services. Located within the central district, it is the hub for high-tech enterprises, R&D institutes, creative design practices and modern service providers, which form the support backbone for the new knowledge-based economy.
- KIC Village for residential homes, offices, retail, recreation and entertainment facilities, a boulevard which stretches from Fudan University through the entire KIC Village, featuring cafes, teahouses, art galleries, book shops, supermarkets and so on.
- Jiangwan Sports Centre built in 1935. After extensive renovations, it consists of a football stadium, a multi-purpose hall and an indoor swimming pool.
- KIC Tech Park is aiming to become a world leader in research and development. KIC is set to become a digital community and be a blueprint for the future development of cities in China.

The focus of the Tech Park and Plaza is nanotechnology, and therefore relies heavily on the research base established by Fudan University and medical school, which are located less than 1km from the centre. Other target sectors include: information technology, biotechnology and environmental technology. The Tech Park aims to attract three key tiers of private sector companies: 1) Incubator or start-up companies; 2) Small-Medium Enterprises; and 3) Multinational Companies. The logic is that larger companies provide confidence and critical mass for the project, as well as outsourcing their own R&D activities through investment in the smaller companies.

The key attributes for success identified by the parties involved were: Availability of talent; proximity to other similar industries and support services; access to capital and a desirable quality of life. The project was part of a broader vision by the government to establish an innovation culture, which would help China shift from a manufacturing economy to a knowledge economy, and therefore to ensure a fertile environment for nurturing new ideas into successful technologies and being a tool to commercialise knowledge and science coming out of Chinese campuses.



If you are interested in finding out more and meeting with the LSDC and its partners, please contact:

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