

WOMEN IN CLEANTECH

Is Cleantech Entrepreneurship missing out on the Diversity Dividend?

An Action Plan from the London Sustainable Development Commission

December 2018



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BACKGROUND

London Sustainable Development Commission

The London Sustainable Development
Commission (LSDC) was established in
2002 to provide independent advice to 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 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



I have the privilege of leading this exciting work for the London Sustainable Development Commission (LSDC) that's all about getting more women into and leading the city's cleantech industry. This is the sector that isn't really a sector. It's a way of working. It's a cross sectoral approach to business operations and daily lives that produces the technologies, goods and services that reduce negative impacts on our environment, and it's an important and growing part of London's economy.

The LSDC's Women in Cleantech project is taking place at an auspicious time. Throughout 2018, to mark the centenary of the first women winning the right to vote in the UK, the Mayor of London's #BehindEveryGreatCity campaign is celebrating the city's role in the women's suffrage movement. This will mark the progress that's been made for and by women

over the past 100 years, and take real action to tackle gender inequality in London. As part of this, I had the great privilege to attend the unveiling of the statue of suffragist Millicent Fawcett earlier this year, marking the fight 100 years ago for women to get the right to vote. 100 years later we had to fight to get the first statue of a woman by a woman in Parliament Square. In 100 years, much has changed and much has not, so we fight on!

London's low carbon, environmental goods and services sector is growing at 6% p.a. it could do better as was highlighted in the LSDC's Better Future Report'. Our initial investigatory work also showed that the participation of women in this critical sector is very low. Anecdotal evidence shows women are more likely to buy into the social impact of cleantech, yet with their contribution largely untapped, we wondered how much more could be achieved if we could harness the passion, insight and perspective that women typically bring to business, and wondered what was preventing their contribution. From that curiosity this work was born!

Over the last few months, we've surveyed and met with some great women contributors from the field during our research and workshops. This has given us some fantastic insight into what prevents women entering the cleantech sector and how we attract and retain them here to drive forward the much-needed step change.

This is not a problems-focused report and there is no room for bandwagons in here. On the basis that studies show that businesses with women at strategic and senior management levels generally outperform businesses with no, or fewer, women in these positions, this is an action focused report with one ambition – to power women forward to play a significant role in delivering on the ambitions of the cleantech sector.



We have spoken with some amazing women to truly understand what matters to them and we have learned a lot. There was consensus that students are made to choose too early in their lives between the sciences and the arts – a complete contradiction to working life where businesses need communicators

who understand science, and scientists or mathematicians with effective communication skills. We learned that we can all do more by sharing our own career stories, such as in schools or via social media. And we learned the importance of male role models who treat women as equals in the workplace; these can be just as important as female ones.

Many issues raised were not unique to the cleantech sector: unconscious gender bias, ‘impostor syndrome’ and relatively low female participation in STEM subjects all emerged. But some sector-specific topics were also raised. This included a sense that the cleantech sector was one in which it was possible to have a social purpose and deliver global impact in equal measure – something that was likely to attract women into the industry and so should be promoted.

This is not a short-term project. This is the start of a campaign. So far, we have attracted the active support from some great organisations whose ambitions align to ours and will lend much needed impetus to making this happen. You can read more about how they have chosen to be a significant part of the future for women in cleantech later in the report. We hope that this report will inspire more individuals and organisations to join this movement and be part of this exciting future. If that sounds like you then please get in touch.

Karen Lawrence

Karen Lawrence

*Deputy Chair, London Sustainable
Development Commission*

EXECUTIVE SUMMARY

As part of this ongoing work to develop a Cleantech Innovation Cluster in London, the London Sustainable Development Commission (LSDC) has been investigating the diversity of the sector to ensure that as the innovation ecosystem is developed, good practices are fully embedded into its structure and working practices.

There's anecdotal evidence that there are fewer female than male founders in Low Carbon Entrepreneurship but not much insight into the extent of this gap or how to encourage more women into the sector.

The research we have undertaken has uncovered some of the reasons behind any imbalances so that we can propose solutions to political and business leaders. Women have so much to offer the cleantech sector, but it appears that their potential is currently untapped. To reach its full potential, London's cleantech sector must, as it grows, draw from the talents and ideas of more women entrepreneurs, innovators and leaders. Businesses with women at strategic and senior management levels have been shown to outperform those without.

This report draws on the results of four related pieces of work undertaken by the LSDC:

- Desk research
- A survey of individuals active in the cleantech industry to learn about specific gender-related challenges and opportunities experienced by cleantech entrepreneurs
- Two challenge workshops where female cleantech entrepreneurs were invited to share their experiences of the gender related challenges facing them
- A solutions workshop with a broad audience of entrepreneurs, business support agencies, investors, policy makers etc. to co-create a range of possible initiatives and solutions to enable the broadest possible participation and success of women in this sector.

The research found that there is a lack of data on the number of women in cleantech so comparative data from similar sectors has been used to draw conclusions.

There are many challenges facing women in cleantech including both personal and institutional challenges. These include:

- Attracting women in cleantech
- Retaining more women in cleantech
- Entrepreneurship as a route to greater flexibility
- Not fitting the mould
- Lack of confidence
- Active discouragement and sexist behaviour
- Accessing finance

The work undertaken by this project has resulted in the development of a series of recommendations and workstreams that offer the field of cleantech numerous opportunities to increase the participation of women in cleantech entrepreneurship. The aim of our Action Plan is to ensure that the London cleantech economy benefits from attracting female innovators to the field, keeping them in a thriving business community and helping them succeed in cleantech entrepreneurship as current and future leaders.

These recommendations have been developed in partnership with the cleantech community to ensure we do this together and take them forward collectively. Of course, some are easier to undertake than others and we have recognised this in the workstreams identified.

The Action Plan will be co-ordinated initially by the LSDC who will convene a steering group of partners to take forward the “Women in Cleantech” agenda with the numerous partners from industry that have pledged their time, resources, expertise and organisations to taking these workstreams forward.

The solutions and recommendations that were discussed in the workshops and will be taken forward in the action plan include:

Workstream 1: Connecting existing networks

- Promote women and equality in the cleantech sector, through suitable mechanisms for managing connections and collating activity within the London cleantech ecosystem.
- All cleantech projects and businesses to commit to gender and diversity tagging their data for employees and businesses being supported.

Workstream 2: Working with the finance community to improve gender parity in the companies receiving financing.

- Understand and test how to establish a female friendly finance environment, by creating a cleantech focused female investment network, a taskforce of committed organisations and individuals, and providing best practice guidance to the investment community.

Workstream 3: Strengthening the existing ecosystem, amplifying activity and developing best practice.

- Develop and share best practice on inclusivity to enable a cohesive ecosystem support to cleantech SMEs.

Workstream 4: Cohesive, strategic and targeted communications to inspire the next wave of female cleantech entrepreneurs.

- Develop a comprehensive marketing, communications and promotional campaign that is delivered to promote ‘women I can aspire to be’ to the female would-be cleantech entrepreneurs deciding what their next career step should be.

Workstream 5: Working with schools and education Institutes to encourage girls and young women into the field.

- Encourage more women into cleantech by developing a network of female cleantech champions that promote their work and the exciting opportunities in cleantech through schools, colleges and universities.
- Work with others to provide guidance on encouraging pathways to entrepreneurship in cleantech.

Workstream 6: Addressing unconscious biases and giving women the tools and skills to succeed in cleantech entrepreneurship.

- Create a central resource to develop, deliver and promote diversity and inclusion as a priority for the cleantech innovation ecosystem.



1. INTRODUCTION

WHY THIS PROJECT AND WHY NOW?

In 2016, the London Sustainable Development Commission's (LSDC) published *Better Future: A Route Map to Creating a Cleantech Cluster in London*. This report recognised the scale of the challenge set at the COP21 Paris Climate talks, but also the opportunity for London to develop new businesses and technologies to meet the climate challenge.

'Cleantech' describes those products and services that avoid or repair harmful effects on the environment caused by human activity. These products and services are central to a low-carbon economy and will need to be the norm in a zero-carbon London.

As part of this ongoing work to develop a Cleantech Innovation Cluster in London, the Commission has been investigating the diversity of the sector to ensure that as the innovation ecosystem is developed, good practices are fully embedded into its structure and working practices.

With this year being the centenary of the suffragette movements success in achieving the right to vote for women in the UK, and the GLA's #BehindEveryGreatCity campaign celebrating this success and promoting

women as leaders, there is political will to promote and motivate more work with, and promotion of, women-led enterprises. Our partners for this project are Imperial's Climate-KIC Accelerator and Better Futures. Both organisations are primed to engage with women-led businesses and offer them the support they need to grow and succeed. We will support them to develop innovative products and processes, to navigate the first year of the business, as well as taking the next step to growth and the development of low-carbon, carbon limiting, or other environmentally sound technologies.

There is anecdotal evidence that there are fewer female than male founders in Low Carbon Entrepreneurship but not much insight into the extent of this gap or how to encourage more women into the sector.

The research we have undertaken has uncovered some of the reasons behind any imbalances so that we can propose solutions to political and business leaders. Women have so much to offer the cleantech sector, but it appears that their potential is currently untapped.

To reach its full potential, London's cleantech sector must as it grows, draw from the talents and ideas of more women as entrepreneurs, innovators and leaders. Businesses with women at strategic and senior management levels have been shown to outperform those



without. While anecdotal evidence suggests that the percentage of women in cleantech is higher than in tech more broadly, it also shows that many female heads of firms are not taking leading positions or are prevented from doing so for a number of reasons and are therefore seen to take a back seat to their male counterparts.

This study will examine why women are so underrepresented in London's low carbon revolution and recommend corrective actions. We have heard from women (and men) in the sector to help inform the study and resulting recommendations.

The Commission is seeking to understand the reason behind this gender imbalance in the context of the London cleantech innovation ecosystem. These are some of the questions we hope to address in this report.

- Why do women constitute such a small proportion of London's cleantech entrepreneurs?
- How far are we from gender parity in London's cleantech industry?
- How can we bring more women into the city's cleantech start-ups?
- What are the current barriers faced by women in entering and leading the sector, and how can we design these out?

Recent evidence shows that businesses with women at strategic and senior management levels generally outperform those without.¹ To help London's large and growing cleantech sector reach its full potential it must therefore draw on the talents and ideas of women as entrepreneurs, innovators and leaders.

Anecdotal evidence suggests that the percentage of women in cleantech is higher than in tech more broadly. It also shows that many female heads of firms are not taking leading positions or are prevented from doing so for a number of reasons and are therefore seen to take a back seat to their male counterparts. This report will explore the evidence base for this, help tease out why it might be happening, and make recommendations for how to maximise opportunities for women in London's cleantech sector.

The LSDC further aims to develop and implement a plan of action to increase gender diversity, which recent evidence suggests will have a lasting positive impact on the growth and success of London's cleantech businesses.



¹ <https://www.mckinsey.com/business-functions/organization/our-insights/delivering-through-diversity>

Academic research² suggests that firms with female first-hires have a higher share of female workers at the end of the first year after entry. The research finds that firms with female first-hires are more successful and stay longer in the market and concludes that gender diversity in leading positions is an advantage for start-up firms.

There are many challenges facing women-led cleantech SMEs in London and the UK. Some examples are:

- Gender disparity: Recent revelations in this area, e.g. BBC, have shown that the gender pay gap nationally across all sectors is still a problem. This is compounded by the wider issue of a lack of women in senior positions across all sectors, but particularly STEM industries. At its origins, the disparity can be traced to lower participation in STEM subjects, clubs and activities at educational levels (GCSEs and above).
- Studies show that businesses with women at strategic and senior management levels generally outperform businesses with no, or fewer, women in these positions.³ Gender imbalance is therefore harmful to the success of cleantech businesses.
- Based on anecdotal evidence, we suspect that the percentage of women in cleantech is higher than the percentage of women in tech.

METHODOLOGY

This report draws on the results of four related pieces of work undertaken by the LSDC:

- Desk research
- A survey of individuals active in the cleantech industry to learn about specific gender-related challenges and opportunities experienced by cleantech entrepreneurs.
- Two challenge workshops where female cleantech entrepreneurs were invited to share their experiences of the gender related challenges facing them.
- A solutions workshop with a broad audience of entrepreneurs, business support agencies, investors, policy makers etc. to co-create a range of possible initiatives and solutions to enable the broadest possible participation and success of women in this sector.

We had captured and synthesized our findings from these pieces of work and these underpin our recommendations for action.

² Andrea Weber and Christine Zulehner (2009) - Female hires and the success of start-up firms - American Economics

³ <http://fortune.com/2015/03/03/women-led-companies-perform-three-times-better-than-the-sp-500/>



2. UNDERSTANDING THE CHALLENGES AND OPPORTUNITIES

GENDER DIVERSITY DATA IN CLEANTECH

Our research has shown that the lack of reliable, transparent data about gender in cleantech entrepreneurship is notable and significant. This data is essential for raising awareness of the current situation and monitoring progress towards greater parity.

Academic research in this area is also limited. One relevant academic paper highlighted the lack of research in this area alongside a notable gap in data around the participation of women in low carbon and sustainability entrepreneurship and a lack of monitoring of gender considerations in the low carbon / sustainability entrepreneurial eco-system.⁴

Therefore, one of the project's key recommendations is to encourage greater gender tagged data in the cleantech entrepreneurship and business support ecosystem. **Without accurate data the value of remedial actions cannot be assessed.**

A recent report from The Entrepreneurs Network and Beauhurst⁵ shows that “Women are starting businesses at pace but are failing to secure the financing required to grow - just a tenth of growing companies with revenues between £1m and £250m are run by women. Yet scale-ups are vital to UK economic growth.”

While research at the beginning of the project highlighted that there is little or no robust published data on women's representation in the cleantech sector, over 80% of our survey respondents agreed or strongly agreed

that ‘Fewer women than men participate as leaders and entrepreneurs and innovators in cleantech’.

Specific data on funding for female-led cleantech start-ups is also unavailable although an unpublished report by Climate-KIC⁶ has indicated that of the early stage cleantech companies receiving UK grant funding, 74% had no female founder compared with 6% which had no male founder, with only 20% having a mixed gender board.

COMPARATIVE DATA: MAKING ASSUMPTIONS

In the absence of data specific to cleantech, we have drawn on available data from other industries and linked sectors where there is a clear intersection with cleantech.

- The recent Gender Pay Gap reporting requirements indicate that in companies with more than 250 employees, women's pay is on average 18% lower than men across the economy. This is largely due to the lack of gender parity at senior levels in organisations.⁷
- Research from Founders4schools shows that women represent just 17% of employees in tech, 4% of software engineers, 3% of VC partners and 1% of leadership positions in the Science, Technology, Engineering and Mathematics (STEM) sector.⁸

⁴ Outsios, G and Ara Farooqi, S, Gender in sustainable entrepreneurship: evidence from the UK, Gender in Management, Vol 32 No3, 2017 pp183-202. <https://www.stir.ac.uk/research/hub/publication/23577>

⁵ <https://about.beauhurst.com/blog/female-founders-data-women-business/>

⁶ Unpublished Climate-KIC report.

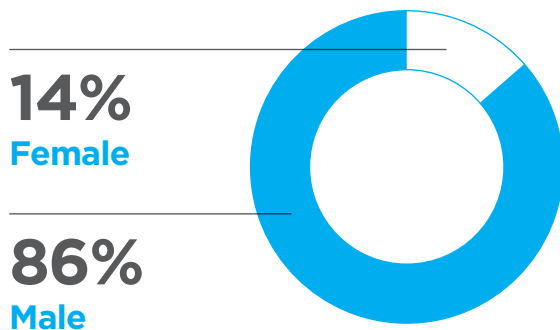
⁷ Gender Pay Gap Report, House of Commons Briefing Paper 7068, 2018

⁸ Mentoring Matters, The Entrepreneurs Network, 2018 - <https://www.tenentrepreneurs.org/research/mentoring-matters>

- Research from Women in Science and Engineering (WISE) has shown that only 14% of management positions in Science, Engineering and Technology (SET) are held by women.⁹
- Only 24% of graduates from core STEM subjects are female.¹⁰
- Data on academic STEM-based spinouts from major UK universities indicate less than 12% have a female founder, and that they attract only 9% of the investment.¹¹
- There is also a lack of female investors investing generally as shown by research by the UK Business Angels Association.¹²

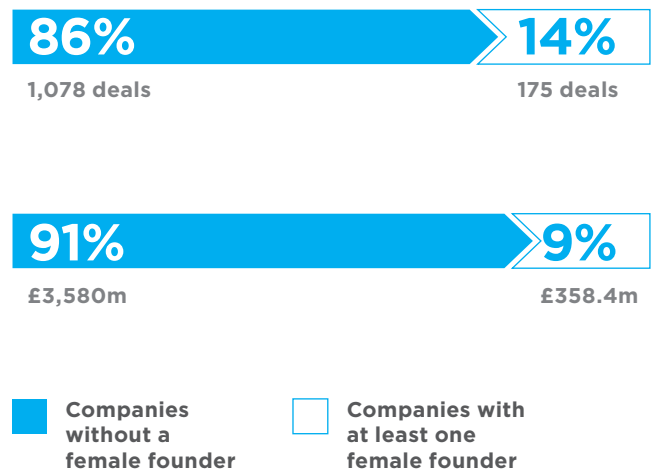
- Untapped Unicorns is a report from the Entrepreneurs Network, the Female Founders Forum and supported by Barclays Bank. It provides some sobering statistics on the scale of inequality in the UK start-up ecosystem. Research shows that 86% of early stage deals completed in 2016 were by companies with no female founder, and only 9% of the £3,580m invested went to companies with at least one female founder.¹³

Figure 1: UK Business Angels by Gender



Source: Centre for Entrepreneurs/UK Business Angels Association (2015)

Figure 2: Untapped Unicorns Report



Publicly announced deals only. Source: Beauhurst

⁹ WISE Campaign Statistics - <https://www.wisecampaign.org.uk/statistics-category/workforce/>
¹⁰ WISE Campaign Statistics - <https://www.wisecampaign.org.uk/statistics-category/workforce/>
¹¹ Pennington Manches, Academic Spinouts 2016-17, 2017. <https://www.penningtons.co.uk/media/1314304/academic-spinouts-a-report-on-the-funding-of-uk-spinouts-2016-2017.pdf>
¹² UK Business Angels Association 2015
¹³ Untapped Unicorns, The Entrepreneurs Network, 2017. <https://www.tenentrepreneurs.org/research/2017/4/11/untapped-unicorns>

PERSONAL INSIGHT: HELEN WOLLASTON, WISE



“For over 30 years, WISE has been supporting organisations to increase the number of girls and women in Science, Technology, Engineering and Mathematics (STEM), from the classroom to the boardroom.

Although there are more women working in STEM in the UK than ever before, the gender gap in technology is widening.

Analysis by WISE found that women are involved in less than 10% of all patents filed in the UK - compared to a global average of 30%.

There are more than 430,000 jobs in low carbon businesses and their supply chains, employing people in locations right across the country. In London, the growth of cleantech presents fresh opportunities to attract women into STEM who are looking to work in a sector where they can make a real difference. Despite getting better grades than boys at GCSE, physics comes 19th in choice of A levels for girls compared to 3rd most popular for boys. Of 14,000 engineering apprentices in 2017, only 450 were girls.

WISE Chief Executive Helen Wollaston said; “This is a huge missed opportunity for girls, who are missing out on well-paid and fulfilling careers, for business and for society. I want women to make sure that women get the chance to play their part in developing technologies, products and services to reduce our carbon footprint and save the planet for future generations”.

¹⁷ The IEMA State of the Profession Survey, IEMA, 2018 - https://transform.iema.net/sites/default/files/iema_state_of_the_profession_survey_2018.pdf

¹⁸ Surge in female entrepreneurs narrow UK gender gap, FT, 5/7/17 - <https://www.ft.com/content/6b27babc-607a-11e7-91a7-502f7ee26895>

¹⁹ “Two-Thirds of Women in U.K. Suffer From Imposter Syndrome At Work”, Karen Higginbottom, Forbes, 29th July 2018 - <https://www.forbes.com/sites/karenhigginbottom/2018/07/29/two-thirds-of-women-in-uk-suffer-from-imposter-syndrome-at-work/#4ae71a906ccf>

PATENT DATA ANALYSIS

“The UK Intellectual Property Office ‘Green Channel’ aims to accelerate the processing of patent applications for inventions that are declared as having ‘clean’ or ‘green’ applications, an excellent incentive for inventors. Research by WISE found that in 2017, only ~7% of the patents filed through this channel were done so by teams with at least one female. This number is considerably lower than the ~9% of all patent applications submitted in the IPO on the same period in the general channel, showing that we still have work to do to improve gender parity - even at the invention stage of cleantech innovation.”



* UK Intellectual Property Office

** The UKIPO Green Channel offers accelerated examination regimes for patent applications directed to inventions that promise to deliver environmental benefits. The Green Channel was introduced in May 2009 to encourage and fast-track green technologies, by accelerating the prosecution procedure for these applications, with the aim to getting these technologies onto the market more quickly.

The data available suggests that the gender disparity in cleantech is no different from other parts of the economy. Not only is the UK missing out on 1.2m new enterprises due to the untapped potential of women,¹⁴ but there is a growing evidence base that gender diversity at board level is simply better for business. A 2017 report from McKinsey showed a 3.4% increase in earnings for every 10% increase in gender diversity,¹⁵ and the International Monetary Fund found that companies with a large share of women in senior positions have significantly higher return on assets.¹⁶

Addressing the lack of women within cleantech start-ups is simply good for business.

As the cleantech sector is a horizontal sector that encompasses a range of vertical sectors with everything from renewables, waste and energy to carbon finance, there are a considerable range of skills and jobs that are needed to make the cleantech sector flourish. The skills needed within the cleantech sector are not just engineering and STEM focused but also include marketing and PR, communications, project management etc. and therefore the opportunity to attract a wide range and diverse workforce is considerable.

In addition, there is a real opportunity to help women meet their career aspirations through cleantech entrepreneurship. Purpose or values-based 'sustainability' is a popular

choice for women, with 61% of entry level workers being female. However, only 23% of those in a leadership position are women – indicating a lack of career progression on par with other industries and leading to a sector gender pay gap of 14%.¹⁷ These statistics may mask that the sustainability sector also includes 'social entrepreneurs' who require a less technical requirement than the defined 'cleantech' sector but do indicate that this sector can be more attractive to women than STEM in its broadest sense.

There is also growing evidence that women are increasingly attracted to entrepreneurship, with the proportion of women going into new business rising 45% between 2013 and 2016.¹⁸

The combination of purpose or value-led cleantech and entrepreneurship therefore offers an enormous opportunity for women.

WHAT THE RESEARCH TELLS US

Our online survey and the workshops highlighted several personal challenges for individuals as well as institutional challenges felt by individuals. The purpose of the survey and workshop was to get first hand feedback and identify issues and opportunities for women on how we can improve the presence and success of women in cleantech. Detailed findings from the survey and workshops can be found in the appendices.

¹⁴ Women's Business Council. Women in Enterprise: The Untapped Potential, 2016 - <https://bcswomen.bcs.org/women-in-enterprise-the-untapped-potential-report-launched-at-the-house-of-commons-by-fsb-org-uk/>

¹⁵ Gender Balance and the Link to Performance, McKinsey, 2015 - <https://www.mckinsey.com/featured-insights/leadership/gender-balance-and-the-link-to-performance>

¹⁶ Gender Diversity in senior positions and firm performance, IMF, 2016 - <https://www.imf.org/external/pubs/ft/wp/2016/wp1650.pdf>

PERSONAL INSIGHT: DR HAYAATUN SILLEM, ROYAL ACADEMY OF ENGINEERING



“For me, working in engineering has been an incredibly rewarding experience and I feel privileged to now be in a leadership role in the profession. As someone who comes from multiple under-represented groups in engineering, I’ve been reminded many times

of the assumptions that we all make about each other, and even today I find some people are taken aback when they first meet me and realise that I am the CEO of the Royal Academy of Engineering because I don’t look the way they expected me to! I hope and believe that as a result of more people who aren’t from the majority group being appointed to roles like this, we’ll be able to shift some of those stereotypes about what a leader looks like. I also believe that the experience of being from an under-represented group has made me a more empathetic and inclusive leader because I don’t assume that everyone feels the same way I do. To me, inclusive leadership is just good leadership – inclusion is something that everyone can contribute to and everyone can benefit from, and we’re going to need everyone, including those in the majority groups, on board if we’re going to finally make progress towards tackling this longstanding diversity deficit”.

PERSONAL AND INSTITUTIONAL CHALLENGES

Several personal challenges were highlighted in the survey and workshops. These ranged from lack of confidence and ‘impostor syndrome’,¹⁹ through to challenges such as male dominance in the investor community and the societal expectations around family responsibilities (see table 1 for the full list of concerns raised). If the London cleantech community is to work towards gender parity in the cleantech community in London,

there is the opportunity to provide support and guidance at both the personal and the institutional levels to address these issues.

‘Impostor syndrome’ - a phrase used to describe the feeling that one is insufficiently qualified or talented to fulfil one’s job satisfactorily; there is evidence to suggest that Impostor Syndrome is experienced by significantly more women than men.

SUMMARY TABLE OF THE ISSUES RAISED IN SURVEY AND WORKSHOPS:

	Personal Challenges	Institutional Challenges
Attracting more women into cleantech	<ul style="list-style-type: none"> • Not fitting the mould • Lack of awareness of career opportunities in cleantech • Not enough chances to experience the sector 	<ul style="list-style-type: none"> • Language used in recruitment and course literature can be unattractive to women • Cleantech is not promoted to women as a career opportunity
Keeping more women in cleantech	<ul style="list-style-type: none"> • Work-life balance and managing caring responsibilities • Lack of role models • Unconscious bias and sexist behaviour stopping women progressing • Wanting to make a difference • Lack of confidence to succeed 	<ul style="list-style-type: none"> • Responsibilities and costs aren't equally shared • The sector is currently male dominated • Recruitment and promotion requires male advocacy • Perception that purpose and profit are mutually exclusive • Feminine leadership styles not valued
Helping women succeed in cleantech	<ul style="list-style-type: none"> • Hepeating • Imposter syndrome • Lack of flexible working patterns • Lack of finance training • Being aware of the risks involved 	<ul style="list-style-type: none"> • Male dominated language and behaviour • Lack of expectation of women from male dominated sector • Many existing networking events not family friendly • Finance is male dominated • Different risk calibrations between men and women especially within finance



ISSUES RAISED

Attracting and retaining women in cleantech

One of the main priority areas that emerged from our research is how to attract more women into cleantech given the personal and institutional challenges they face. A challenge that is made more difficult by the fact that other areas of tech also demonstrate similar gender disparities.²⁰

However, lack of awareness of what career opportunities are available and lack of opportunities to experience the sector are barriers to engaging more women. As a relatively new sector, there is much that could be done to raise awareness in the education system and individuals' experiences in school and college have a significant influence on the likelihood of women to start out on a science based or technical career. It was also noted that technical qualifications are not essential to being able to participate in the sector and entry via marketing and finance roles is also an effective route.

It may also be the case that the language we use to describe cleantech is not particularly appealing to women and that we could make the career pathway more attractive to women by using different language to that currently used such as accelerators, incubators, cleantech etc.

A point raised at the workshops was that cleantech has the potential to solve the issue of everyone in the world having access to clean water – what more of a social impact can you have on the world? Yet women still don't equate cleantech with social impact. Showing that more can be done here in schools alongside the current initiatives around women in STEM will be essential to increasing the number of women entering the sector.

²⁰ <https://www.ft.com/content/d5d6035a-f63e-11e7-a4c9-bbdefa4f210b>

PERSONAL INSIGHT: CATRIONA MCGILL, DESOLENATOR



"I lead technology development at Desolenator, a cleantech start-up looking at solar-powered desalination. This basically involves using the sun's energy to take the salt out of seawater so that people

can drink it. My focus is on getting our first product to market: a household-size desalination unit.

We have a giant issue in the cleantech and engineering sectors: there aren't enough women. And this lack of gender parity means that women who do work in the sector can sometimes feel unwelcome, or like impostors. It's not fair to exclude women from these brilliant roles and industries, and it's indisputable that diverse teams produce better results. And the cleantech sector is important. There are so many climate-related problems we need to tackle. Which is why I feel it's crucial to encourage more women to join London's cleantech sector, so that we have the best teams working on the solutions to these global problems.

And best of all, it's one of the most exciting and empowering sectors to be a part of."

ROYAL ACADEMY OF ENGINEERING

"Engineering has a persistent skills shortage and more needs to be done to attract, recruit; and more importantly, retain women. In addition, a more diverse sector will help boost UK innovation and creativity.

Engineers play a vital role in shaping the world around us and tackling global grand challenges so it's essential that we create an engineering workforce that is more reflective of the society we serve."

Retaining more women in cleantech

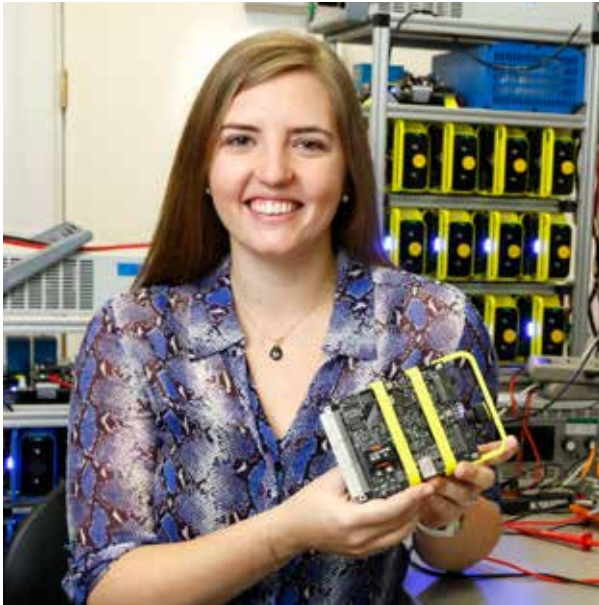
The second vital aspect of building a diverse and thriving cleantech community is to ensure that women stay and thrive in the sector. Conversations during our workshops showed that many of the women were attracted to this sector because of a desire to make a difference and to do something meaningful that has an impact on the world.²¹

In addition, many of the networks through which individuals informally or formally experience the sector are often male dominated and not easily accessed or attractive to women.²²

²¹ LSDC Women in Cleantech workshops held on the 24 and 26th April 2018

²² LSDC Women in Cleantech workshops held on the 24 and 26th April 2018

PERSONAL INSIGHT: CAROLYN HICKS, BRILL POWER



"I am Chief Financial Officer and co-founder of Brill Power, a battery intelligence start-up. Brill Power makes advanced electronics for large battery packs that extend a

battery's lifetime by up to 60 per cent, avoiding wasted battery capacity that contributes to significant electronic waste. If I had to describe working as a female cleantech entrepreneur in one word, it would be: lonely. There are undoubtedly many amazing women out there, but I still continuously find myself at meetings, conferences, and workplaces where it's difficult to even find one woman. The cleantech entrepreneurial space is one of the many places perfect for gender balance. I'm biased, but I think we have the best entrepreneurs – they are passionate and intelligent. Cleantech is super cool, both in what it does and how it does it. Cleantech is about changing the world, something that must be led by both men and women.

So, why do I think it's important to have women in cleantech? Because I need you here."

This male domination of the sector can be a barrier for some women who are put off by having to deal with male behaviour and prejudices and see few female role models to emulate. The need for strong role models was a recurring theme in our conversations with many noting that we need male role models who visibly value the contribution from women as much as we need strong female role models who have learned to deal with the issues around them.

Survey Quote: *"I was the only woman in the room for every single technical meeting! The lack of role models is something I struggle with - it would be really nice to work with senior women in my field and learn from their behaviour and experiences!"*

Survey Quote: *"All my board are male, and the majority of the senior leadership is also male, making it difficult to have work-based role models and aspirations for development."*

Entrepreneurship as a route to greater flexibility

Entrepreneurship itself, as a career path for women, has both positive and negative characteristics. Whilst it can be attractive for women with care-responsibilities, due to the perceived greater flexibility in working hours, it also has a perceived lack of security. 97% of women polled by Aston University cited freedom to adapt their approach to work as a key reason for starting their own business, while 85% mentioned flexible working conditions.²³ It can also be seen as a risky choice for early career stage women who are looking ahead to having a family. While women's participation in entrepreneurship is growing, men's participation in entrepreneurship is still double that of women.²⁴

A common stress-point for women is the challenge of balancing family responsibilities, such as caring for children and elders, with their working life.²⁵ This stress-point was mentioned frequently in our conversations with workshop participants. The societal shifts which would bring greater parity in caring time and responsibilities would be equally welcomed in the cleantech sector.

Not fitting the mould

In our conversations with women entrepreneurs, many expressed the opinion that they had capabilities and behaviour that were highly advantageous to their success and the success of their businesses, but that they were not always recognized as such.

The listening, consultative behaviour and inclusive management styles which many women exhibit are particularly useful for



start-up businesses where failure is often a result of dogmatism and failure of leadership to listen to a variety of views.²⁶ Women also felt that they were better at seeing the wider picture and balancing risks for the business which is more likely to ensure stability and longer-term success. Well-developed organizational skills and the ability to multitask, were also felt to be useful in small and early-stage businesses where several roles need to be fulfilled by one person.²⁷

However, these positive characteristics were often felt to be undervalued and overlooked. This was considered a material issue when pitching for investment to the predominantly male investor community. Seeking Venture Capital funding was deemed particularly problematic due to the style of pitch expected by investors. There is a body of evidence from our survey and workshops suggesting that women are less likely to appear confident or represent their achievements or claims

²³ Surge in female entrepreneurs narrow UK gender gap, FT, 5/7/17 - <https://www.ft.com/content/6b27babc-607a-11e7-91a7-502f7ee26895>

²⁴ Surge in female entrepreneurs narrow UK gender gap, FT, 5/7/17 - <https://www.ft.com/content/6b27babc-607a-11e7-91a7-502f7ee26895>

²⁵ LSDC Women in Cleantech workshops held on the 24 and 26th April 2018

²⁶ LSDC Women in Cleantech workshops held on the 24 and 26th April 2018

²⁷ LSDC Women in Cleantech workshops held on the 24 and 26th April 2018

in a positive light. There was discussion at the workshops during which it was suggested that the expectations of VC investors very much focus on more overt confidence,²⁸ and women's preference to present a balance of risk is likely to be a large factor in women's lesser success at raising Venture Capital investment.²⁹

Survey Quote: *"I pitch to mostly men, I'm funded by mostly men, I employ mostly men, men are our customers, men are our vendors - there is nothing that feels gender balanced about this industry."*

Confidence

Confidence – or lack of it – was a significant and recurring theme for women working in cleantech entrepreneurship, often holding them back from success and recognition. In response to the online survey question 'Which, if any, do you believe you have experienced as a result of your gender' 43% of respondents cited 'lack of confidence' ahead of 'the impact of caring responsibilities' (31%) and 'not having your voice heard in your organisation' (31%) or 'not being taken seriously by investors' (30%). None of the (4) male respondents cited 'lack of confidence' as an issue and none of the male respondents felt their challenges were affected by their gender.

Figure 3: Survey results showing some of the personal issues the respondents faced

		Response Percent	Response Total
Not having your voice heard in your organisation		31.82%	14
Not being taken seriously by investors or funders		29.55%	13
The impact of caring responsibilities (i.e. for children/elderly/disabled) on work-life balance)		31.82%	14
Lack of self-confidence		43.18%	19
Risk aversion related to caring responsibilities		15.91%	7

The need to be accountable for one's own success was recognized and women had found behaviour to build confidence such as stating up front their credentials were helpful and could be shared with others through practical initiatives such as coaching and mentoring.

Survey Quote: *"I always feel that I will get found out as not expert enough."*

²⁸ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

²⁹ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

Active discouragement and sexist behaviour

Sexist behaviours were also widely discussed in our conversations. Unhelpful behaviour experienced by women ranged from gender biased questioning from investors, through to investors seeing women's values and ethics as a barrier to commercial success. At predominantly male networking events, often themed around perceived male interests such as male-dominated sports, women experienced both being harassed and being ignored.

Other commonly cited experiences included having technical questions at pitches directed at less technical male colleagues and a tendency of clients and some colleagues to defer or listen to a less relevant or qualified male colleague rather than a woman.³⁰ Women also felt it was difficult to be heard in meetings where they may make a recommendation, get ignored and then the recommendation put forward by a man will be heard and adopted (coined in popular media as 'hepeating').³¹



Workshop Quote: *“Even as the founder of my business, questions are often directed at my male staff at pitching events even if I have been the main presenter.”*

Survey Quote: *“I am struggling to find powerful/acceptable ways of calling out situations in which I have been either not heard, misinterpreted or had incorrect assumptions assigned to me. I would dearly like some help with that if there are tried and tested methods for success!”*

Responses to unhelpful behaviour were felt to range from building women's confidence and resilience to challenge unhelpful behaviour with individuals as well as encouraging institutions, such as the investment community, to behave differently.

There was a recognition by some at the workshops that it may sometimes be useful for women to exhibit more male characteristics such as more purposefully and overtly displaying confidence when pitching as well as seeking more female-friendly institutional behaviour - such as events which focus on being able to narrate the story around the product and its target market with a focus on balanced risk management, rather than the more superficial focus on simply presenting the low risk scenario with unsupported confidence.

³⁰ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

³¹ <https://www.independent.co.uk/life-style/hepeating-what-woman-ignore-men-idea-repeat-sexism-misogynist-a8080601.html>

PERSONAL INSIGHT: NICOLA MCCHEYNE, CENTRICA INNOVATIONS



“Nicola’s mission is to make Centrica more entrepreneurial and she is responsible for internal venture creation in Centrica. Nicola was one half of the team that built the Cornwall Local Energy Market, a £19m demonstrator to build the energy system of the future. Prior to Centrica, Nicola spent seven years working in a sustainable energy charity and is passionate about social impact and purpose led organisations.”

As a woman in the cleantech sector, I’ve experienced the best of times and the worst of times. I’ve experienced sexism in the workplace; including an occasion where I was advised to ensure ‘I go home and put make-up on’ before an event. I have been put on notice of redundancy on my first day of maternity leave and lost key projects to male colleagues when announcing my first pregnancy. These anecdotes, thankfully, are few and far between, but broadly speaking I have frequently observed just how difficult it can be for women to progress in the sector and that the bar for progression is always a ‘little bit higher’ for women.

I have also been hugely fortunate to benefit from fantastic mentors, all of which have been men that have observed a talent and passion for the sector and pushed me to succeed and have confidence in my abilities. The sector is changing for the better, but this needs to accelerate to ensure we do not haemorrhage women at every stage of their career development.”

Accessing Finance

Access to finance is a significant challenge to all entrepreneurs whether they are male or female and whatever sector they are in. It does appear that women are particularly challenged in raising finance across all sectors with just 9% of the £3.5bn investment in tech start-ups going to businesses with at least one female founder.³² In addition, the angel investment network which is an important part of the early stage business ecosystem is largely a male domain with female business angels making up only 14% of the UK community.³³ This was certainly reflected in our online survey where fundraising was frequently cited as one of their greatest challenges faced by female entrepreneurs.

Survey Quote: *“Access into female-friendly angel or VC investors would be very helpful.”*

Our conversations, with women cleantech entrepreneurs raised a range of issues they experience in seeking investment. The finance industry is male-dominated and much of deal-making is based on established networks and relationships.³⁴ Women tend not to be as involved in the networks and events at which those relationships are made and built.³⁵

Deals get done ‘on the golf course’ and women find it harder to access networking events due to family and caring responsibilities.³⁶ In addition, from our research we found that women often run businesses without going out to raise additional finance.³⁷

“In 2016, 5,839 male-founded companies got VC funding, compared to just 359 female-founded companies. In other words, companies run by men got more than 16 times more funding than companies run by women. (Companies with both male and female founders fared slightly better than those founded exclusively by women with 1,067 receiving funding.)”³⁸

Survey Quote: *“Raising investment as a young female where 95% of investors are men is often challenging.”*

There is strong evidence that current processes for raising finance disadvantage women. A well cited study of VC pitching events found evidence that investors ask questions differently of men than of women. They tended to ask men questions about the potential for gains (promotion questions) and women about the potential for losses (prevention questions). Evidence of this bias was found with both male and female VCs and is echoed in the discussions we had with women cleantech entrepreneurs.³⁹

³² Untapped Unicorns, The Entrepreneurs Network, 2017. <https://www.tenentpreneurs.org/research/2017/4/11/untapped-unicorns>

³³ A Nation of Angels, UK Business Angels Association, 2015 - <https://www.enterpriseresearch.ac.uk/wp-content/uploads/2015/01/ERC-Angels-Report.pdf>

³⁴ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

³⁵ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

³⁶ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

³⁷ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018

³⁸ <http://fortune.com/2017/03/13/female-founders-venture-capital/>

³⁹ Harvard Business Review, HBR, 2017 - <https://hbr.org/2017/06/male-and-female-entrepreneurs-get-asked-different-questions-by-vcs-and-it-affects-how-much-funding-they-get>

Venture Capitals frame questions in two different ways

Promotion questions focus on potential gains, whereas prevention questions focus on potential losses. VCs tend to ask the former of men and the latter of women.

Topic	Promotion	Prevention
Customers	Acquisition Example question: “How do you want to acquire customers?”	Retention Example question: “How many daily and monthly active users do you have?”
Income statement	Sales “How do you plan to monetize this?”	Margins “How long will it take you to break even?”
Market	Size “Do you think that your target market is a growing one?”	Share “Is it a defensible business wherein other people can’t come into the space to take share?”
Projections	Growth “What major milestones are you targeting for this year?”	Stability “How predictable are your future cash flows?”
Strategy	Vision “What’s the brand vision?”	Execution “Are you planning to Turing test this?”
Management	Entrepreneur “Can you tell us a bit about yourself?”	Team “How much of this are you actually doing in-house?”

Source: Dana Kanze, Laura Huang, Mark A. Conley, and E. Tory Higgins

Workshop Quote: *“I was genuinely worried that as a female CEO, I was the greatest risk to successfully raising finance for the business.”*

Other funding mechanisms such as crowd funding, where the gender of the leadership is not explicit, seem to be more successful and more popular for women. In 2015, 75%

of female-led rounds were successful on Crowdcube, compared with 55% for male-led rounds. Platforms such as Crowdcube allow for, and indeed require, a narrative around the product/service and its target market. This ‘whole-picture’ style of promotion is aligned to the skills more typically attributed to women. There is also evidence of growth in female-focused funding organisations and initiatives such as Albright, Adelpha and Addidi which combine advice with funding services.

PERSONAL INSIGHT: OLIVIA SIBONY, SEEDTRIBE



“Prior to running SeedTribe, I was an entrepreneur and experienced bias from investors on a number of occasions, including comments around the fact that it was too risky to invest in a woman of child bearing age. I strongly believe that nowadays we have the tools at our disposal to help us run businesses, no matter how we manage our personal lives. Women are proven to be strong founders and we need a paradigm

shift to prove this type of investor wrong, but also to give women the confidence that they can be great entrepreneurs.

SeedTribe is a safe space for early stage entrepreneurs and investors to learn about and grow in this space. As such, we are uniquely positioned to educate and empower our stakeholders to grow in this space. If we can better understand the current barriers to entry for female investors, we have the ability to help address some of them through our content, community and investment opportunities.

It’s important to address the challenge of Climate Change from a number of different angles. If we increase the pool of entrepreneurs in the cleantech space by encouraging more women to join, we increase our chances of finding great solutions to huge problems that we need to address. London has a unique opportunity to be a global leader in this space, especially thanks to its diverse population, and we need to maximise our chances of getting ahead, starting with a broad range of perspectives.”



Our conversations highlight both perceived and actual differences in attitudes to risk and this was relevant both for investment and day to day operation of the business. It was felt that women, while not necessarily being more risk averse, tend to weigh all the risks and talk about them compared with the more masculine optimistic approach to focus much more on the upside. Women felt that they were more realistic about and better at balancing risks, whereas men tended to be more optimistic and this was particularly felt in the financing process. It was felt that a mixed leadership team was therefore likely to bring much more balanced and effective approach to money and finance including ambition, pricing, negotiation, and valuation.

In a theme particularly relevant to cleantech and purposeful entrepreneurship, some women felt that there was a bias against purposeful or values led business⁴⁰ from the investment community and that values-led business were sometimes seen as a less interesting business proposition. There was a perception of being ‘more worried about eradicating hunger than making money’. The notable rise in ‘impact investing’ in recent years has shown that there is a growing interest in values-led business and that women are more likely to start businesses in this area. Increasing awareness of and support for this type of investment will be critical in ensuring that female-led businesses can grow and flourish.

⁴⁰ LSDC Women in Cleantech Survey and workshops held on the 24 and 26th April 2018



3. DEVELOPING THE SOLUTIONS FOR CLEANTECH

The range of challenges highlighted in our research was the basis for the 'Solutions' workshop of the project where over 100 people came together to explore, propose and develop initiatives that the LSDC could support to 'close the gap'. The project team then developed the most promising ideas into our recommendations for action.

Some obviously relevant initiatives are not in the scope of LSDC so were not developed further despite their great potential. For example, reinventing the education system to avoid students having to make choices too early in school and changing education policy to take STEM to STEAM by ensuring the Arts are included are a matter for education policymakers.

CASE STUDY

ACCELERATORS AND INNOVATION SUPPORT - AGENTS OF DIVERSITY?

Our survey indicated that entrepreneurs were most likely to seek (42%) out and find most useful (63%) a mentor or coach. Accelerators and innovation hubs were also sought out (36%) and found useful (42%). Business growth services were frequently sought out (27%) but not found particularly useful (11%).

Accelerators and innovation hubs are an important part of the entrepreneurial ecosystem and have a significant opportunity to support the improvement of diversity and inclusion. There is a growing number of incubators and accelerators for cleantech and sustainability which could be engaged to better deliver diversity. We have highlighted a few examples below.

Innovate UK

Innovate UK firmly believe a good idea for innovation can come from anyone. Diversity is proven to contribute to business success and with this in mind, they're taking the next step in their diversity and inclusion campaign by launching the second round of their awards programme designed specifically for Women in Innovation. This new competition will seek to fund up to eight ideas from female founders, co-founders or senior decision makers, that address the four grand challenges posed by government's Industrial Strategy, covering:

AI and the data economy, clean growth, future of mobility, and ageing society. In addition to the awards programme, they will be holding a series of 'Women in Innovation: Building Success' events to help unlock the potential of women nationwide. The events will highlight opportunities to get support for their innovation, provide expert advice and encourage discussion and networking.

Women in Innovation was first launched in 2016 to address the disproportionately low number of women seeking support from Innovate UK. Their research also showed them that one third of women felt their gender had impacted negatively on their career in innovation, and they wanted to do something to face that. Evidence shows that the proportion of UK women engaging in entrepreneurial activity is around half the level of men; 1 in 3 female innovators believe their gender has negatively impacted their career; and if we can increase participation to the same level, women-led SMEs could contribute a £180 billion boost to the UK economy by 2025.⁴¹ Encouragingly, since launching the inaugural Women in Innovation campaign in 2016, Innovate UK has seen a 70% increase in the number of registrations from female-led applicants and helped a 31-strong cohort of women, who won the first Women in Innovation Awards, achieve business successes.

Bethnal Green Ventures

Bethnal Green Ventures⁴² believes that technology has the potential to transform the way society solves the world's most pressing problems. Diversity and inclusion

have been core values of the tech for good investor since their launch in 2012. Principles such as a commitment to gender balance of speakers at events, a gender-blind recruitment process and a focus on gender balance in their portfolio, have ensured a high level of participation from women. In 2018, their 11th cohort of tech for good start-ups,⁴³ for the first time involved more women than men. Diversity data is collected from participants and progress is reported in the BGV Impact Report. In 2018 BGV launched the Global Goals programme which seeks to support entrepreneurs innovating for achievement of the UN Sustainable Development Goals.

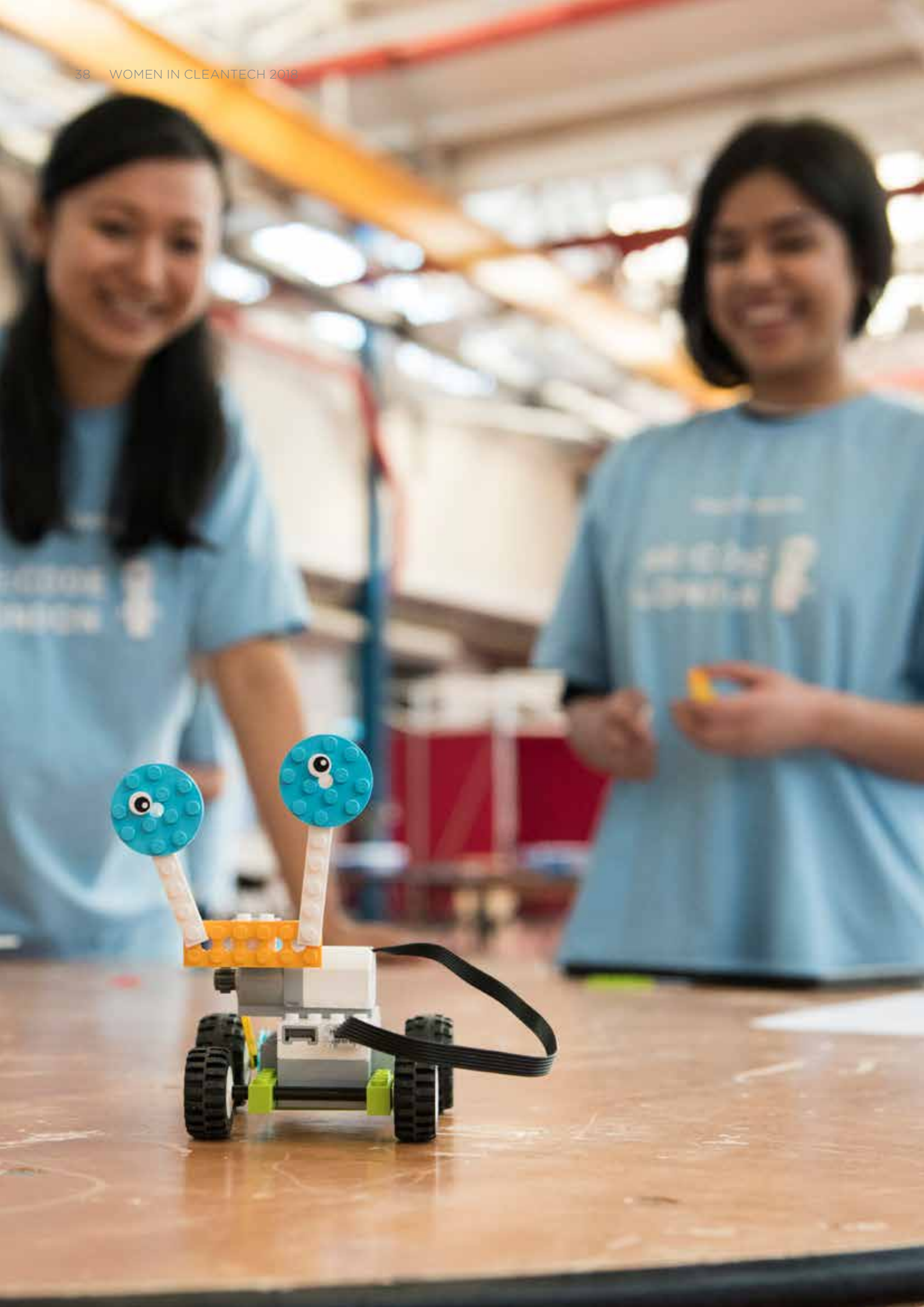
Green Light Programme

In London, the Green Light programme supports London based entrepreneurs to become investment ready. A higher than expected 50% of applicants are from start-ups with a female founder. Unfortunately, this doesn't translate to companies that go on to raise investment, where there is a drop off from female founders. The programme includes a support mechanism that can be used to bring female founders along the journey all the way through to raising investment, with the intention of boosting the number of female founders that raise investment. For the latest Green Light Programme (October 2017) there was a focus on inviting female founders to participate which resulted in six out of the nine companies having female CEOs and founders on the team. (Capital Enterprise Support).

⁴¹ Innovate UK - <https://www.gov.uk/government/news/get-inspired-by-uk-female-innovators> and Innovate UK, 2017. <https://www.gov.uk/government/collections/innovate-uk-diversity-and-inclusion>

⁴² bethnalgreenventures.com

⁴³ <https://bethnalgreenventures.com/blog/announcing-our-spring-2018-cohort/>



4. ROUTE MAP TO INCREASING PARTICIPATION OF WOMEN IN CLEANTECH ENTREPRENEURSHIP

OUR RECOMMENDATIONS

The work undertaken by this project has resulted in the development of a series of recommendations and workstreams that offer the field of cleantech numerous opportunities to increase the participation of women in cleantech entrepreneurship. The aim of our Action Plan is to ensure that the London cleantech economy benefits from attracting female innovators to the field, keeping them in a thriving business community and helping them succeed in cleantech entrepreneurship as current and future leaders.

These recommendations have been developed in partnership with the cleantech community to ensure we do this together and take them forward collectively. Of course, some are easier to undertake than others and we have recognised this in the workstreams identified.

The Action Plan will be co-ordinated initially by the LSDC who will convene a steering group of partners to take forward the “Women in Cleantech” agenda with the numerous partners from industry that have pledged their time, resources, expertise and organisations to taking these workstreams forward.

The LSDC hopes that in the long-term resources can be found to focus on and improve diversity as the Cleantech Innovation Cluster and ecosystem is developed. The LSDC will take these recommendations forward along with the Women in Cleantech Steering Group (WICTSG) in the interim and report annually against progress made. The action plan element of this report will be available separately online on the LSDC’s website and updated on a regular basis as developments take place and new partners come on board.

Workstream 1: Connecting Existing Networks

The Women in Cleantech Steering Group has a significant role to play as an enabler for the cleantech community to improve gender diversity. Existing initiatives such as the Mayor’s Entrepreneurs programme, Better Futures, and the Mayor’s SME Fund, as well as independent organisations such as Sustainable Ventures, Imperial College London, the Finance Innovation Lab, Bethnal Green Ventures and the Green Angels Syndicate, can be allied and provide valuable connections.

Recommendation: Promote women and equality in the cleantech sector through suitable mechanisms for managing connections and collating activity within the London cleantech ecosystem. This should include management of a database of cleantech contacts, mapping mentoring and other support programmes such as events, accelerators and other stakeholders, making connections and contacts that catalyse innovation and growth in the cleantech economy. A trusted point of contact for all things cleantech in London.

Recommendation: All cleantech projects and businesses to commit to gender and diversity tagging their data for employees and businesses being supported.

Commitment	Lead Partner	Delivery timeframe
Bring together mentors and mentees within cleantech. Welcome and support women in cleantech to join the WISE Campaign's mentoring programme.	WISE Campaign	March 2019
Develop a 'get involved' web page that that directs potential mentors to a mentoring brokerage programme.	WISE Campaign and Cleantech London	March 2019
Undertake further analysis of the WISE Campaign's available patency data to understand the number of women filing cleantech patents in the UK and London.	WISE Campaign	December 2018
Look to establish a central role to bring the community together regularly and maintain a partnership management role on women and diversity in cleantech.	Women in Cleantech Steering Group and LSDC	During 2019/20
Be a lead partner for the Women in Cleantech Steering Group; connect our network of SMEs, funders and Innovation Advisers to ensure female cleantech entrepreneurs get the best possible support from the entire cleantech ecosystem. Including providing a venue space for network/collaboration interactions e.g. workshops, mentor meet-ups, peer to peer collaboration and support interactions etc.	Sustainable Ventures	2019

WOMEN IN CLEANTECH PARTNER

WISE campaign

WISE will support the LSDC to grow cleantech in London through:

1. Sharing case studies which demonstrate what can be done to attract, retain and develop opportunities for women in science, technology and engineering.
2. Bespoke engagement materials based on our tried and tested People Like Me campaign, inspiring girls to choose physics, maths, computer science and engineering when they choose options at 16, because these subjects are a passport to exciting and rewarding careers in cleantech. WISE will work with the LSDC to showcase women working in cleantech as role models and train them to deliver outreach activities to girls in local schools and the wider community.
3. Benchmarking and action-learning based on the Ten Steps - an industry-led framework to develop an inclusive organisational culture. Originally developed by large corporates, WISE has piloted Ten Steps for SMEs which could be used to support the participation of women in London's emerging cleantech hub.
4. Developing an evidence base on the participation of women in cleantech, drawing out lessons learned and recommendations which could be implemented elsewhere.

Ref: <https://www.wisecampaign.org.uk/>

Workstream 2: Working with the finance community to improve gender parity in the companies receiving financing

This report demonstrates that the current environment for female-led cleantech SMEs securing finance is not meeting this community's needs and, as such, this crucial industry is missing out a vital opportunity to grow and develop. Finance is another area where there is an opportunity to bring together a wide-range of partners committed to, or diversifying into, green finance. With the creating of a Green Finance Institute in London, the potential to imbed diversity at an early stage is immense.

Recommendation: Understand and test how to establish a female-friendly finance environment, by creating a cleantech focused female investment network, a taskforce of committed organisations and individuals, and providing best practice guidance to the investment community. The continued rise of non-traditional funding such as community-based renewables funding vehicles and interest-based peer to peer funding organisations such as Ethex and Abundance Finance (both also women-led) offer a promising alternative to current ways of raising finance. By increasing support for such funds, more women-led cleantech start-ups may gain access to funding.

Commitment	Lead Partner	Delivery timeframe
Lead the workstream to explore the viability, model infrastructure and funders for an investment fund solely for women in cleantech.	Centrica Innovations	2019/20
Offer support for the early-stage female entrepreneurs applying to Sustainable Ventures Female Accelerator, the Centrica fund and other partner funds to ensure they have the best possible chance of securing growth funding.	Sustainable Ventures	2019
Create a female-focused equity accelerator to support female-led businesses at the earliest stages of their funding requirement and to develop female-led businesses to a level of investment readiness to take advantage of the Centrica fund and other female-focused angel/VC funds.	Sustainable Ventures	2019
Target and encourage women-led cleantech enterprises to apply for the current Sustainable Accelerator fund to increase the percentage of women in cleantech entrepreneurship achieving finance.	Sustainable Ventures	On-going
Support further investigatory work into this area to understand the issues, barriers and opportunities for increasing funding levels to women-led cleantech Entrepreneurs.	London Sustainable Development Commission, Women in Cleantech Steering Group	2019

Commitment	Lead Partner	Delivery timeframe
Ensure that our work on Green Finance takes the learnings from this report to the Green Finance Institute and our Green Finance workstreams.	London Sustainable Development Commission	2019
Asking investors for their gender when completing their profile on SeedTribe, in order to track gender split of investors and then work to increase the number of female investors.	SeedTribe	2019
Tracking the number of female entrepreneurs, specifically in cleantech, in order to give them opportunities to take part in the Mayor of London's Women in Cleantech programme and grow the number of female entrepreneurs, in all Impact areas but specifically in cleantech.	SeedTribe	2019
Running talks and workshops targeting female entrepreneurs and investors about the start-up world.	SeedTribe	2019
Helping better understand the barriers that are stopping more women from becoming angel investors, seeking to address those we feel are in our power to do so, depending on the barriers.	SeedTribe	2019

WOMEN IN CLEANTECH PARTNER

Centrica Innovations - Nicola McCheyne

Over the last ten years I have been at the forefront of disruption in the energy sector. From building local energy systems to testing new energy storage technologies, my focus has been on how we can accelerate the decarbonisation of the energy system. Today I work in Centrica Innovations, a new unit that has been established to invest £100m in technology and ideas that will transform the way we all live, work and move. Our role at Centrica is to identify the entrepreneurs and technologies that will benefit homes and businesses, while shaping the energy system of the future.

The future of energy will be driven by technology but shaped by creativity. The diversity required to accelerate this change requires three critical skills: curiosity, collaboration and creativity, and these will need to be executed with environmental and social purpose. This is the pivotal role I believe women in the sector can and need to lead. Many other industries that exhibit these characteristics are led by women, and the cleantech sector will lose out if we don't recognise the diversity required to meet the very real challenges the sector is facing. The inflexion point, we are observing in the industry needs diversity at its core,

so I believe the work that the Sustainable Development Commission is doing to encourage female entrepreneurs in the sector is not only critical, but overdue.

SeedTribe

“By understanding the baseline of gender split in the investor world, we can seek to make the necessary changes in order to increase the number of female investors. A diverse lens of investors means a broader perspective in looking at businesses to invest in, which in turn will enable us to increase our chances of investing in businesses that will address some of the key challenges we face in society today.

Spending face to face time with female investors and entrepreneurs is an effective way to listen to our stakeholders and help address their concerns, in order to empower them to be more active in this space. By having a more diverse pool of female entrepreneurs and investors, we are opening up more opportunities for great businesses to grow, which others may not have had the perspective to consider. We must empower a more diverse group of stakeholders to take part in this space in order to help solve a wider set of challenges in new ways, as well as increase economic opportunities through new businesses being created and scaled.”

Workstream 3: Strengthening the existing ecosystem, amplifying activity and developing best practice

The London cleantech innovation ecosystem is vast and motivated, but spatially disparate and lacks a collective voice to promote the cleantech agenda, lobby government departments and decision-making organisations, and engage with the London authorities as a connected and influential community.

There are numerous examples of good practice, exciting female entrepreneurs and networks, opportunities to join mentoring

programmes, funding and accelerator programmes, and events that need to be promoted locally, nationally and globally. London is perfectly positioned to act as a global centre for cleantech and deliver exemplar practices for diversity and inclusion.

Recommendation: Develop and share best practice on inclusivity to enable a cohesive ecosystem support to cleantech SMEs.



Commitment	Lead Partner	Delivery timeframe
Share best practice guidance and tools with the LSDC and WICTSG to enable them to improve diversity performance across the ecosystem. Share our best practice guidance with which organisations can align and a common metrics framework for monitoring progress.	Royal Academy of Engineering	Launched September 2018, support will be ongoing
Share our best practice in attracting women-led cleantech SMEs to our workspace, and in supporting them to grow within our workspace and network.	Sustainable Workspaces	2019
Supporting growing businesses to overcome gender bias in recruitment by providing guidance on gender neutral language and processes.	Lead partner to be identified	By early 2020
Use the outcomes of this work to develop a support package, event programme and delivery structure that values diversity and ensures women-led cleantech SMEs are catered for, supported and empowered to succeed.	Better Futures Project Delivery Partners	Started December 2018 and support will be ongoing

WOMEN IN CLEANTECH PARTNER

Royal Academy of Engineering

“We want to help early stage companies put diversity and inclusion (D&I) at the heart of organisation from inception. Engineers exist across all sectors of the economy and the Academy is keen to support the attraction, recruitment, retention and progression of engineers wherever they are employed. We can provide case studies to demonstrate

success of those who put D&I at the heart of the organisation.

There are persistent barriers to the attraction, recruitment and retention and progression of women in engineering. Supporting Women in Cleantech to galvanise action and share information and findings from action across engineering which might resonate.”

Workstream 4: Cohesive, strategic and targeted communications to inspire the next wave of female cleantech entrepreneurs

The London ecosystem has the potential to lead best practice on gender diversity in cleantech entrepreneurship. The opportunity to maximise the impact of diversity and inclusive messaging throughout the community’s communications is exciting. Identifying inspirational role models and advocates, promoting them through existing communications channels, amplified by the ecosystem and connected networks, is vital to attract more women to the industry and make them see that they can succeed.

There is a need for visible ‘Women like me’ and this action threads throughout the other recommendations. This work needs to happen through each stage of development; schools, universities, incubators, investment networks, industry events and awards, and the success stories.

Recommendation: Develop a marketing, communications and promotional campaign to promote ‘women I can aspire to be’ to the future female cleantech entrepreneurs.

Commitment	Lead Partner	Delivery timeframe
Sharing case studies which demonstrate what can be done to attract, retain and develop opportunities for women in science, technology and engineering.	WISE Campaign and Better Futures	Launch 2019
Change design and format of Cleantech Innovate conference to maximise female participation and provide additional support for entrepreneurs post the event itself and include specific support for female entrepreneurs.	Cleantech Innovate	2019
Develop Women in Cleantech awards to showcase women leaders and talent with existing awards schemes such as the WISE campaign and Women in Tech.	London Sustainable Development Commission	2019/20

WOMEN IN CLEANTECH PARTNER

Cleantech Innovate conference

“We run the UK’s largest annual cleantech event, Cleantech Innovate, designed to facilitate getting investment into cleantech businesses. We have now committed to design this in a way which aims to maximise participation by female entrepreneurs and investors.

We are also looking at how we can provide additional support for entrepreneurs post the event itself and will ensure we include specific support for female entrepreneurs.

“We need to maximise the performance of cleantech businesses if we are to restore our Earth to sustainability, and greater gender diversity will help achieve this. Inclusivity creates the most supportive and happy societies. I want to make the biggest contribution I can to both sustainability and the society I live in.”

Charlotte Morton,
Cleantech Innovate

Workstream 5: Working with schools and education institutes to encourage girls and young women into the field

There is an opportunity to increase the awareness of the wide range of career opportunities that are available to women in the cleantech sector. As a relatively new sector, there is much that could be done to raise awareness in the education system and individuals' experiences in schools and colleges. These institutions have influence on the likelihood of women to start out on a science based or technical career. It was also noted that technical qualifications are not essential to being able to participate in the sector and entry via marketing and finance roles is also an effective route. There will also be a need to promote cleantech to other subjects, such as engineering and IT, as a potential career path.

The LSDC recognises that this is not a short term or easy action and will take time to take effect.

Recommendation: Encourage more women into cleantech by developing a network of female cleantech champions that promote their work and the exciting opportunities in cleantech through schools, colleges and universities.

Recommendation: Work with others to provide guidance on encouraging pathways to entrepreneurship in cleantech.

Commitment	Lead Partner	Delivery timeframe
Work with women in cleantech to promote cleantech entrepreneurship in schools and universities through the WISE Campaign's 'People Like Me' programme.	WISE Campaign	Launch registration 2019
Develop guidance for London schools and colleges on the opportunities in cleantech.	Women in Cleantech Steering Group and LSDC	2019/20
Work with Team London to recruit women in cleantech for the GLA's London Enterprise Adviser Network.	Women in Cleantech steering group and cleantech businesses	2019/20
Invite students from schools, colleges and universities to visit our workspace to meet inspiring women leading and working in cleantech companies in our workspace. We hope this will enable young women to see real-life role models doing exciting work in cleantech entrepreneurship.	Sustainable Workspaces	2019



Workstream 6: Addressing unconscious biases and giving women the tools and skills to succeed in cleantech entrepreneurship

This action requires participation by all ecosystem stakeholders and is not an easy issue to solve or overcome quickly. There are a number of areas where the work undertaken by the LSDC can have an impact; promoting best practice to all stakeholders, offering a dedicated resource for the ecosystem to refer to for support, communication campaigns that address and promote ways of overcoming this behaviours and biases, working with industry

partners already having success in this area, and providing female cleantech entrepreneurs with the skills they need to overcome bias. Much work needs to be undertaken in particular in the finance sector as we have highlighted in workstream 2.

Recommendation: Create a central resource to develop, deliver and promote diversity and inclusion as a priority for the cleantech innovation ecosystem.

Commitment	Lead Partner	Delivery timeframe
Explore the potential to create a central resource to focus on improving, promoting and championing diversity in cleantech for the cleantech innovation ecosystem.	Women in Cleantech Steering Group and LSDC	By end 2021
Develop training and mentoring programmes to challenge discrimination and unconscious bias with existing programmes such as the WISE campaign.	Lead partner to be determined	By early 2020
Showcase Sustainable Workspaces as an attractive working environment for women and as an example of how creating a hub/cluster with a critical mass of women can attract and inspire other women.	Sustainable Ventures	On-going



5. NEXT STEPS



This Action Plan is the start of a larger movement to attract women to this exciting field, to keep them there while they learn and innovate, and to help them succeed as entrepreneurs and industry leaders. The LSDC recognises that more work needs to be done, and there are many more opportunities to take action. To that end, the LSDC will set-up a Women in Cleantech Steering Group to make sure this work continues. The LSDC is delighted to welcome the following inaugural members of that Steering Group. Others will be invited to join as they commit to deliver actions to take forward the diversity agenda in cleantech:

- Karen Lawrence, LDSC Deputy Chair
- Nicola McCheyne, Head of Ideas Lab, Centrica
- Charlotte Morton, Founder and Chief Executive, We Are Orchard
- Dimitra Christakou, Membership Director, The WISE Campaign
- Susannah McClintock, Investment Director, Sustainable Ventures
- Olivia Sibony, Head of SeedTribe Impact Crowdfunding, a spinoff of Angel Investment Network

“Global warming is a challenge that is impacting us all. The cleantech space is an incredible opportunity to take positive action to make a difference in this space, with the added benefit of having the potential for big returns, along with game-changing solutions. There are many ways you can get involved in growing this sector, which can be enriching and inspiring.”

Olivia Sibony,
SeedTribe

“The diversity challenges in the cleantech sector are real and damaging the sector’s reputation and ability to deliver the decarbonisation necessary to mitigate the impacts of climate change. The steering committee is a platform to drive change, positively contribute to the growth of the sector and inspire more women to play a role in the future of cleantech.”






Nicola McCheyne,
Centrica Innovations















APPENDIX 1: SURVEY FINDINGS







Please note that personal data has been removed

Cleantech and Innovation Survey Results 2018




1. What stage of the cleantech entrepreneurial journey are you at now?			
		Response Percent	Response Total
1	Aspirational - I would like to but haven't started yet		6.56% 4
2	New starter - I have recently started on my venture		24.59% 15
3	Seasoned - I have been doing this for some time		50.82% 31
4	I am not, and don't aspire to be, a Low Carbon / Cleantech / Greentech / Sustainability / entrepreneur		1.64% 1
5	Other (please specify):		16.39% 10
		answered	61
		skipped	0
Other (please specify): (10)			










2. What type of enterprise are you a part of?			
		Response Percent	Response Total
1	Sole trader / sole founder		13.11% 8
2	Part of an established SME		32.79% 20
3	A start-up with a team		32.79% 20
4	Part of a corporate venture		4.92% 3
5	Part of an academic establishment		1.64% 1
6	Part of a large organisation, (NGO or Corporate)		8.20% 5
7	Other (please specify):		6.56% 4
		answered	61
		skipped	0
Other (please specify): (4)			
	1	Scale up	
	2	Part of advisory/investment firm	
	3	Many Roles	
	4	Sole trader and SME venture, also consultancy to major corporates.	




3. What is the make up of your leadership team?			
		Response Percent	Response Total
1	All female		19.67% 12
2	All male		16.39% 10
3	About even - male and female		36.07% 22
4	More females than males		3.28% 2
5	More males than females		24.59% 15
6	Other (please specify):		0.00% 0
		answered	61
		skipped	0
Other (please specify): (10)			




4. Where are you geographically located – please tick one				
			Response Percent	Response Total
1	East of England		1.69%	1
2	Eire		0.00%	0
3	Midlands		3.39%	2
4	London		66.10%	39
5	N Ireland		0.00%	0
6	North East		1.69%	1
7	North West		0.00%	0
8	Scotland		0.00%	0
9	South East		16.95%	10
10	South West		10.17%	6
11	Wales		0.00%	0
12	Yorkshire and the Humber		0.00%	0
			answered	59
			skipped	2
Other (please specify): (10)				





5. As an aspiring or current cleantech leader / entrepreneur what have you found to be your most difficult challenges so far?				
			Response Percent	Response Total
1	Open-Ended Question		100.00%	46
			answered	46
			skipped	15





6. Are there any challenges that you feel have been affected by your gender?				
			Response Percent	Response Total
1	Yes		50.00%	23
2	No		34.78%	16
3	Not sure		15.22%	7
			answered	46
			skipped	15
If Yes, please explain to help us understand your experiences (23)				




7. Which, if any, do you believe you have experienced as a result of your gender? Tick all that apply				
			Response Percent	Response Total
1	Not having your voice heard in your organisation		31.82%	14
2	Not being taken seriously by investors or funders		29.55%	13
3	The impact of caring responsibilities (i.e. for children/elderly/disabled) on work-life balance		31.82%	14
4	Lack of self-confidence		43.18%	19
5	Risk aversion related to caring responsibilities		15.91%	7
6	Creating and building a diverse team		9.09%	4
7	Communicating your idea to your potential market		11.36%	5
8	None of the above		18.18%	8
9	Other (please specify):		20.45%	9
			answered	44
			skipped	17
Other (please specify): (9)				






11. Do you think your gender has affected the opportunities or advantages available to you?				
			Response Percent	Response Total
1	Yes		47.62%	20
2	No		16.67%	7
3	Not sure		35.71%	15
			answered	42
			skipped	19
If Yes, please comment to help us understand your answer (19)				

12. Do you feel, or have you ever felt, disadvantaged by your gender on your cleantech entrepreneurial journey?				
			Response Percent	Response Total
1	Yes		35.71%	15
2	No		45.24%	19
3	Not sure		19.05%	8
			answered	42
			skipped	19
If Yes, please comment to help us understand your answer (13)				

13. "Fewer women than men participate as leaders/entrepreneurs or innovators in cleantech". Based on your observations and experiences in the sector, to what extent do you agree or disagree with this?				
			Response Percent	Response Total
1	Strongly disagree		2.38%	1
2	Disagree		0.00%	0
3	Neither agree nor disagree		11.90%	5
4	Agree		42.86%	18
5	Strongly agree		42.86%	18
			answered	42
			skipped	19
Please comment to help us understand your answer (25)				

14. What age are you?				
			Response Percent	Response Total
1	18 to 29		21.43%	9
2	30 to 49		47.62%	20
3	50 to 64		28.57%	12
4	65+		0.00%	0
5	Prefer not to say		2.38%	1
			answered	42
			skipped	19

15. What gender do you identify as? - please tick one				
			Response Percent	Response Total
1	Male		9.52%	4
2	Female		88.10%	37
3	Other		0.00%	0
4	Prefer not to say		2.38%	1
			answered	42
			skipped	19

16. What best describes your level of educational attainment - please tick one				
			Response Percent	Response Total
1	Secondary Education		2.38%	1
2	First Degree (Bachelor or equivalent)		19.05%	8
3	Higher Degree (Master or equivalent)		59.52%	25
4	Doctoral or equivalent		16.67%	7
5	Prefer not to say		2.38%	1
			answered	42
			skipped	19

17. Please use this space to tell us anything else you'd like to share that could help with this research				
			Response Percent	Response Total
1	Open-Ended Question		100.00%	18
			answered	18
			skipped	43



APPENDIX 2: WORKSHOP FINDINGS

WOMEN IN CLEANTECH WORKSHOP NOTES

1. ACCESS TO FINANCE IS A CHALLENGE. TO WHAT DEGREE IS THIS SPECIFIC TO WOMEN AND WHY?

Access to networks, building relationships and trust

Finance is based on relationships, but women are not as involved in the events and activities where those relationships are built and nurtured. There is a sense that 'deals get done on the golf course' or in male dominated networks. It is unclear whether women don't get invited or they don't accept invites (perhaps because the timing conflicts with childcare or other commitments).

While there are a few women targeted angels and groups, they are tiny in comparison with the mainstream where the majority of investors are men.

Several participants felt that women weren't encouraged (even if they weren't actively discouraged) from raising finance.

There is a feeling that women are not seen as credible by the investment community (reference to the McKinsey / HBR report on investor language) and if they are it takes a long time to gain that credibility – longer than for men. There are very few strong female role models or mentors so limited expectation as well as limited access to support and development opportunities.

Women however can and do make use of other advantages, other social networks, educational networks etc but it is not regarded as mainstream.

Solutions themes for access to networks and building relationships

- encourage a more balanced approach to events and networks (50:50 golf club gender!) or
- provide alternative family friendly opportunities.
- Highlight differences in language used with training / a campaign?
- Mix it up a bit?!

Perceptions and behaviours

There was good discussion at both workshops around behaviours male and female which create unhelpful misunderstandings and perceptions. For example, apologetic language can be construed as a lack of confidence rather than empathy, body language and be misinterpreted, pitches and conversations are often interrupted by men but those interruptions are not countered by women. Women displaying behaviours which are similar to men are sometimes labelled as bossy and aggressive rather than assertive or normal. Use of exclusive language in a male dominated world does affect expectations and confidence in ability.

Age is probably a greater barrier to perceived capability than gender. Raising finance as a YOUNG woman is worst of all worlds. It is unclear whether young men suffer the same (ref HBR review of language).

Women have a tendency to gravitate towards more purposeful endeavours and are often passionate about the impact of the business not simply its financial performance. This can sometimes lead to women being described as 'too emotional, too sensitive' and 'more worried about saving the world than making money'. Being driven by purpose does not have to be to the exclusion of making money.

There is room for a variety of skills in any business and leadership can take a number of different styles. The non-technical skills often brought to the business by women are not always valued by investors.

Behaviours (male and female) which reinforce existing stereotypes are widespread but how do we change those behaviours. It is for example particularly difficult for women to call out unhelpful behaviours in an environment where those behaviours are normalised. Who should call out those behaviours and how?

Possible solutions themes for perceptions and behaviours:

- Provide particular support for young entrepreneurs (a la young global leaders programme?)
- Workshops for men on unhelpful behaviours.
- Training for women on how to call out behaviours?
- Examples of financially successful purposeful business

Attitudes and perceived attitudes to risk

There is a perceived and real difference in attitudes to risk. Women tend to weigh all the risks and talk about them compared with the more masculine approach to ignore the downsides.

Women are more realistic on forecasts, more likely to balance risks, and have different approaches to ambition, price, negotiation, valuation etc. Women may be more justifiably sceptic of 'too good to be true'.

Angels vs VCs. Approaches to raising investment vary by stage and female approaches may be more in favour of women at some of those stages. E.g. for angels, realism is better but for VCs a more aggressive financial forecast will be expected. It is possible that men and women work to different scales on risk and there is a need to 'recalibrate' the approaches.

Women may be more comfortable with a subsidy approach (grants and financial instruments) and men more comfortable with financial risk?

Men are more comfortable with hardware but not as comfortable with behavioural changes etc.

Perception of being “more worried about eradicating hunger than making money”. Is there a place for values led business. e.g. conversation with impact investors may be easier for some types of cleantech. Women more likely to be in supportive giver / nurturer roles.

Alternative approaches such as community and collaborative based funding structure may be more appealing and welcoming to women. The rapidly growing and changing area of Impact Investing offers opportunity for novel approaches and vehicles and may be more woman friendly.

There are challenges with start-ups, early stage companies and SMEs not being able to cover maternity pay etc.

Solutions ideas:

Risk recalibrator!

Confidence, under- and over-

Confidence in the business, its team and its prospects is closely related to the ability to raise funds. There is an interaction between confidence, risk assessment and successful financing and it seems that confident male engineers go into confident male dominated finance and then come up against not so confident women entrepreneurs at the other end of the confidence spectrum.

There appears to be optimists vs realists with men being more optimistic and women more realistic. This may be why mixed teams give a more balance approach to pricing, valuations and finance.

There was a sense that pitch events (now so common but by no means the only way of finding an investor) are better suited to male ways of pitching to a male audience which is expecting a male way of pitching. There may be alternative mechanisms which are more successful for women (for investors as well as entrepreneurs).

Solutions themes:

- Do we reduce the confidence of men, up the confidence of women, or recalibrate between the two! Maybe we also need a ‘recalibration of perceived capability’.
- Can we find different mechanisms for start-ups to find investors – not just pitchfests!

2. WHY DID YOU ENTER THIS FIELD AND WHAT DO YOU THINK HAS STOPPED MORE WOMEN ENTERING CLEANTECH?

Lack of awareness of what exists and what is possible

This theme came up in all 3 groups – i.e. that this is not a commonly known career path and you don’t know what you don’t know. More needs to be done in schools etc to ensure that women are aware that this career path even exists. However, many of the women in the groups had entered the sector because of parental role models (mum or dad) who are in broader science or engineering-based roles. Question: How to we educate **parents** better about this sector? (It’s not all about schools). Need to explain what cleantech is in simple language – we need to demystify it.

In a similar vein, understanding that you do not need to have a maths or engineering qualification to be able to enter – i.e. you can come into e.g. marketing or finance roles and still be part of this sector. This is a key point as much of the rest of the discussion focused on STEM etc but it’s not all about science and engineering! A couple of women came in via the broader sustainability and/or urban farming route.

Purpose-led delivering impact

Many of the women were attracted to this sector because of a desire to make a difference and wanting to do something meaningful that has an impact on the world. e.g. energy problems affect billions of people all over the world – fixing these positively impacts billions of people. One lady stated that she entered because she has a deep-seated passion for nature and the environment.

This is a sector where you can be purpose led **and** have a massive beneficial impact. It was thought that women are much more focused on ensuring they can see the impact of what they are doing. Climate change is the biggest challenge/theme in the world, so this is an exciting sector to be able to have impact.

If women are identified as having a public service motivation, then this is a great sector for them. How can this be picked up and aligned better when women are younger?

If tech seems prohibitive then the key is to flip this around and help women understand that technology is the means to the end. Focus on the problem we are trying to solve rather than tech.

Conversely, we also need to sell engineering more widely to girls – to help them understand that engineering can open doors to lots of careers.

Opportunity to experience the sector

Providing great opportunities for e.g. internships where these are written in a language that appeals to women and are promoted in places (virtual or digital) that women more typically frequent.

Developing supportive networks is essential as these provide the necessary opportunities to experience the sector. This is a key skill that all women need to develop.

Behaviours and prejudices

This is a male-dominated sector and so can be daunting if considering entering. However, many of the women have grown up seeing women around them (e.g. mum or other powerful role models) asking for what they want and seeing themselves as equal to men and have therefore not necessarily seen the male behaviours as a barrier. They are used to dealing with them. Agreed that this was a barrier for many women who haven't developed the same resilience and ability to 'deal' with intimidating behaviours. This is something that should start to be 'taught' at school and university.

There were a couple of examples of where women in the room had done engineering in large part because they were told they shouldn't or couldn't, so they did! One woman had come in mid-career as it had taken her that long to learn to ignore the negative opinions of others.

The views on the current support for girls in schools etc was highly polarised with many having great experiences and many having the complete opposite. Private vs. state schools and all girls' vs co-ed schools also showed this polarisation with no evidence that any one 'type' is better than the other.

The need for strong role models in the sector was highlighted by all groups with some also noting that we need male role models who visibly value the contribution from women as much as we need strong female role models who have learned to deal with the issues around them. The important role of networking coming in here as well.

The attraction of start-ups

One woman mentioned that she wasn't even aware at first up that start-up was a 'thing'. However, many agreed that working in a start-up can be attractive to women because it's very hands on and practical – ideas can be followed up and implemented.

Risk aversion

There is a perceived lack of security in the sector with such high % of start-ups – women want security, especially as they start to think ahead to having children, and this sector can be seen as too risky.

The role of clusters

The UK (and London in particular) is seen as being very supportive of the start-up community and of cleantech so there is a real opportunity to build on this and attract more women in.

3. IN RELATION TO BEHAVIOURS AND CAPABILITIES, WHAT PARTICULAR ADVANTAGES AND CHALLENGES EXIST FOR WOMEN IN CLEANTECH AND WHY?

Advantages

A number of advantages that women have in the cleantech sector were highlighted in the discussions. However, it was clear from the discussions that these are often not valued enough and highlighted by women themselves and others when pitching for investment or to customers. How can these advantages be used to promote women-led and owned businesses more?

- Women are often better at seeing the wider picture and balancing risks and providing a more realistic proposition – however this can also be seen as a disadvantage when pitching to VCs where potential and growth is key.
- Being the only woman does make you stand out at events or networking - but not this does not necessarily make the woman more approachable. Women talked about often standing alone and not being approached.
- Expectations are often low from men - so when a woman presents it comes as a surprise and can be seen as a wow factor.
- Women often exhibit inclusive behaviours and management styles which are seen as useful for start-up businesses but are often not recognised as useful by others.
- Women are often better organised and multitask better which can be useful for a start-up where many jobs need to be done by the same person. However, this is not valued enough by the community.

Confidence issues

Confidence issues for women operating in the CT sector came across strongly. It was not clear if this was a systemic issue that stemmed from decades of ingrained behaviour starting with parents, schools etc or something that manifested itself particularly in CT. The issues highlighted do lend themselves to practical solutions around mentoring, confidence building, coaching etc.

- Presenting as the technical lead rather than the CEO was helpful to build confidence and establish credentials
- Needing to own success and believing in yourself - building confidence
- Women often use "I think" instead of "I know"
- Women don't often state their credentials up front
- Need to ask for more - money, salary etc.

Sexist behaviour

A number of sexist behaviours were talked about which are probably not unique to the CT sector. Solutions will range from building confidence in women to challenge this behaviour in a productive way and also setting up programmes for men e.g. the VC community to challenge how they do things.

- Investors not used to hearing a technical pitch from women - questions are often directed at the man on the team
- Calling out behaviour can work, but can also cause tensions
- Pitching - gender biased questioning that is often more challenging to women businesses - how are not going to fail as oppose to how are you going to succeed
- If only women at an event they are often challenged and women have experienced power play and sexist behaviour
- Dealing with sexist issues - humour can often work but also can be detrimental
- Men don't often know how to deal and approach women at events - men think they might be seen as trying to pick up women as opposed to be having a professional conversation.

- If with a male colleague - clients defer to them
- When making a recommendation, women often get ignored and then a male presented it as theirs the idea is accepted
- Women's ethics are often seen as a barrier
- All women teams seen as threatening because so unusual

Business behaviours for a successful cleantech business

A number of issues around the behaviours that are needed to start and grow a successful CT business also came out strongly in the discussions. In particular, the need to exhibit different behaviours as a business grows will change from perceived female characteristics to perceived male characteristics.

An interesting discussion around the format of investment pitches highlighted the need to find and offer an alternative for women-led and owned businesses that are more inclusive.

- Sometimes useful to exhibit male characteristics of showing off when pitching
- Practising man-splaying yourself! Training and coaching needed for women throughout the pipeline
- Difference between pitching to VC's and angel investors - different behaviours needed
- Different behaviours needed at different times and stages of business growth
- The best entrepreneurs ask questions and focus on market needs
- Evidence shows that start-ups and business failure stems from those not listening and dogmatism
- Pitching formats don't work for women - more curated events would be useful
- Customers are often also male dominated.
- When women are aggressive not looked on favourably or being too nice either.
- Social and networking events are often focussed around perceived male likes e.g. sporting events

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