

BusinessGreen

SECRETS OF THE DISRUPTORS

2018

Disrupt markets. Tackle climate change.



In association with

GREENHOUSE

INTRODUCTION



Since its launch 11 years ago, BusinessGreen has surfed the line between two industries undergoing constant disruption - it is one of the reasons I now have a lot less hair.

The disruption is underway across the green economy. As environmental challenges escalate, disruptive systems change becomes the only way to avert potentially disastrous outcomes. The age of incremental progress has to end.

What is interesting is much the same is true of the media landscape. It is an environment where changing consumer expectations and emerging technologies force businesses to become extremely agile or risk failure.

For media and green entrepreneurs alike one thing is critical, disruptors need a purpose. There has to be a clear mission, an explicit goal, an understanding of the market you are trying to create and serve.

At BusinessGreen our theory of change is that the green transition requires accurate and timely information. We are for the green economy, as our mission statement declares.

Fulfilling that mission requires the navigation of two industries experiencing simultaneous disruption. It sometimes leaves you pulling out your hair, but as the Secrets of the Disruptors Report illustrates, incrementalism is no longer an option.

James Murray
Editor-in-chief of BusinessGreen



Greenhouse PR was set up with a clear mission: to accelerate the transition to a sustainable and green economy.

Over the last 10 years, we have worked with disruptors and pioneers – those pushing the boundaries of what’s possible – who, by their very nature, see a problem as a catalyst for positive change.

But, in that same period, we’ve seen climate change accelerate. Extreme weather events are becoming more frequent and we’re in danger of missing the targets set by the Paris Climate Agreement. In short, time’s running out.

That’s why, now more than ever, we need to disrupt markets to tackle climate change. Disruptors share a sense of purpose and a clear mission. It takes courage, creativity and determination to challenge outdated business models. A strong proposition and clear communications are essential to succeed.

By using communications skills to help organisations and disruptors to increase their impact and raise awareness of the new business models and technologies, we will continue to challenge policymakers, investors, partners and consumers, to help drive that change.

Disruptors are critical to meeting the big environmental challenges we face today. From energy to food and transport, this Secrets of the Disruptors Report shows how radical people and organisations are shaking up entire markets.

Anna Guyer
Founder of Greenhouse PR



FOREWORD

It's so human. We talk of disruption, but imagine it happening to someone else — some other organisation or industry, ideally our competitors.

But the message of BusinessGreen's Secrets of the Disruptors report, published with Greenhouse PR, is that every business, every business model, every economy, is now at existential risk of disruption.

Digitalisation is changing everything — and is central to every impending technological breakthrough, from the “internet of everything” through autonomous vehicles and 3D printing to synthetic biology.

What's more, we live in increasingly exponential times. Global greenhouse gas emissions, plastic waste in the oceans, antibiotic resistance, obesity and linked chronic diseases like diabetes, space debris: these are just some of the problems now going exponential. Yet most of us cling onto incremental metrics, models and mindsets. A recipe for disaster, in multiple dimensions.

On the flipside, we teeter on the edge of humungous market opportunities. In recent years, Volans has explored disruptive thinking, technology and business models alongside the Business & Sustainable Development Commission. The Commission caught global attention with its forecast that delivering the UN Sustainable Development Goals could create markets worth at least \$12 trillion a year by 2030.

Change is coming, with immense shakeouts affecting each and all of us, even some of the most iconic innovators and entrepreneurs.

To keep on the right side of history, read on.

John Elkington

Founder of Volans

John Elkington co-founded Environmental Data Service (ENDS) in 1978, SustainAbility in 1987 and Volans Ventures in 2008. His most recent book is The Breakthrough Challenge, with former PUMA Chairman & CEO Jochen Zeitz. He tweets as @volansjohn.

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The following interviews were carried out throughout August and September 2018.

CHARLIE BLAIR

GRAVITRICITY

What does your organisation do and how is it challenging the industry status quo?

Gravitricity is developing grid-scale technology that stores electricity from the grid and releases it back by raising and lowering heavy weights in deep vertical shafts. Initially, the shafts will be existing mineshafts. Later on they'll be purpose-sunk shafts exactly where long-life storage is required. That's when our concept gets really disruptive.

With fast-response, long-life and versatile energy storage like ours on the grid we simply do not need fossil fuel generation. Wind, solar and marine can do it all, and the grid-flows will look very different to how they look today.

Why is this disruptive model critical for tackling environmental challenges?

Without energy storage, all the progress we're making towards electric transport, electric heating and renewables will come to a juddering halt. Durable, flexible energy storage is a core facilitating technology for shifting to a zero-carbon economy.

What are the challenges in creating a business and investment case for this approach?

It certainly isn't easy persuading people to invest in anything that is genuinely new. Apart from anything else, market predictions based on the status quo will be wrong.

The energy storage market is rapidly growing from around \$1bn in 2017 to a predicted \$20bn in ten years' time – that's over \$100bn by 2030.

So for investors who are prepared to take the risk, the rewards could be huge.

How do you build public support for rapid disruption of established business models?

I think public support is overwhelmingly in favour of dumping fossil fuels and replacing them with clean energy and EVs. This is a disruption that many in the West won't even notice – the lights will still come on at the flick of a switch.

In poorer countries our technology enables a leap-frog opportunity when it comes to the grid, potentially helping to avoid the need for large fossil fuel assets. So for half the world it will be a powerful and positive change.

“It isn't easy persuading people to invest in anything genuinely new

What do you expect your industry to look like in 10 years' time?

I've worked in energy technology innovation for 15 years. All the technologies that were rare and expensive when I started will be mainstream: EVs and building-integrated solar for example, while renewables will be delivering more than half of total power demand.

I think now it's underway, the transition will happen quicker than people think.



Charlie Blair is the managing director of Gravitricity, having joined in 2015 following his tenure as head of marine energy in the Carbon Trust's Innovation Team.

Gravitricity is developing a gravity-based system of energy storage, which involves suspending heavy weights in disused mine shafts. When extra power is needed, the weight can be dropped to generate energy.

Blair has 14 years' experience in clean energy technology innovation. He has supported numerous early-stage technology start-ups ranging from electric vehicles through to biomass heating.

 **gravitricity**

I think the big utilities will still be there, but we're already seeing much more competition in generation and supply. Corporate Power Purchase Agreements are a sign of this. It's still electricity, but the contracting will look very different, as well as the balancing.

“Listen to lots of different voices. The advice will often be contradictory, but if you listen to enough people you can find your own way

How should the business community address the risk that disruption will create stranded assets and job losses?

New industries just need to get on with it. Our technology is actually all about taking disused infrastructure and bringing it back into use.

One thing is for sure: we shouldn't be paying to keep obsolete, polluting assets operating just because we spent money on them in the past, nor should we be building assets now with subsidies stretching out for decades.

Gravitrinity is developing long-term grid infrastructure. We're perfectly aware we'll only sell the technology if project developers can see a long-term need. Luckily for us, it's pretty clear that grid-scale flexibility is getting more valuable.

What can policymakers do to accelerate green economic transformation?

The energy transition is happening. Politicians here can choose to either help the UK benefit or sit back and watch as we import technology from abroad.

Energy storage is a case in point. The government and Ofgem don't need to subsidise storage, they just need to get rid of some perverse disincentives stopping it getting onto the grid. Forbidding grid companies from owning storage assets is one example among many.

Which other sectors do you think are most ripe for green disruption?

Agriculture – I think there will be a real move towards less meat consumption and away from forcing calories out of every square cm of land. There'll be high-tech disruption opportunities there – synthetic meat, intensive market gardening using hydroponics – and for low-tech change in the countryside.

'Rewilding' isn't a particularly helpful phrase, but I do think there'll be a move away from farming large parts of the uplands for meat towards maximising biodiversity and carbon capture.

How do you think the business world is going to change by 2050?

I think there's a bit of a divergence between the software revolution in the energy world and the hardware requirements, which sometimes get overlooked. The late tech-guru John Perry-Barlow once told me San Francisco needs to re-focus on gigawatts alongside the gigabytes.

I think there'll be a re-focus on hardware in many industries, not just energy, once the software and big data advances slow down.

What are the characteristics that lie at the heart of disruptive business models?

They're similar to that of any business: a good idea, a good team and a lot of determination and resilience.

Disruptive models probably need more of all three, as the initial barriers will be higher. But at the same time, it's probably easier to recruit a really good team as ambition and excitement are higher.

What advice would you give to a green start-up looking to shake up a market today?

Make sure you listen to lots of different voices. The advice will often be contradictory, but if you listen to enough different people you can find your own way through the muddle.

Stick with it – it'll feel mad one minute, but the next you'll have people wanting to jump on board.

What is the secret of your success in disrupting the status quo?

Having a serious team of founders behind us who have done it before was important.

More recently, having big global engineering companies on board maintains that momentum.

It doesn't mean all investors will want to jump on board, but it does mean they'll at least give you time to pitch.

PETER GRIFFITHS

BIO-BEAN

What does your organisation do and how is it challenging the industry status quo?

bio-bean is the first company in the world to recycle used coffee grounds into biofuels and biochemicals on an industrial scale.

We're tackling some of the UK's 500,000 tonnes of waste grounds produced every year that normally go to landfill. We work within the waste management industry to collect coffee waste produced by businesses all over the UK, and we produce eco briquettes, biomass pellets and a range of biochemicals from coffee waste.

Why is this disruptive model critical for tackling environmental challenges?

Given the scale of the world's waste problems and associated environmental impacts, the waste management industry, which is often slow to change, needs disruptive businesses that can bring new ideas and approaches to the table.

In this industry, innovation is crucial to bring about more effective and efficient waste management systems, higher recycling rates and less waste to landfill.

What are the challenges in creating a business and investment case for this approach?

We've proven the concept in the UK, but coffee waste is produced in large volumes all over the world. Combining this vast international potential with growing demand for energy from biomass, as well as increased impetus in the coffee

industry to incorporate more sustainable practices, has meant that our solution has resonated with investors. In the early days, we were able to supplement investment funds raised with grants and prizes.

To overcome challenges to get here, we had to establish partnerships with waste management companies, custom-build the world's first coffee recycling factory, and bring brand new unproven products to market. Being able to demonstrate these successes has kept investors committed to the business.

“As a green start-up you are swimming with the tide

How do you build public support for rapid disruption of established business models?

Building a really passionate and competent team around you, ensuring that the business does what it claims to do, and understanding the message before you communicate are key to building public support.

In terms of industry support, rather than trying to take on waste management companies directly and replace what they do, we've sought to understand the economics of the way waste coffee is disposed of, and then created a solution that works for everyone.



Peter Griffiths is the chief financial officer of bio-bean, which recycles waste coffee grounds into biofuels, biomass pellets, and bio-chemicals.

It has partnerships to collect waste coffee grounds from café chains including Costa and Caffè Nero to transform into green fuel for homes and businesses.

Griffiths has spent the past 10 years heading up finance and operations teams in social businesses and funding organisations that focused on microfinance, sustainability and climate change.



Waste management companies can provide an innovative new service to their clients; businesses cut carbon and costs by recycling coffee waste, and we achieve a steady inbound supply of coffee grounds from which we can produce biofuels and biochemicals.

What do you expect your industry to look like in 10 years' time?

There's no denying that the earth's resources are depleting, and we're creating ever more waste that's being discarded into the environment. But this fact is now, finally on the public agenda and there's a real anti-waste movement taking place.

We expect to see greater volumes of waste repurposed or recycled, as well as a wider range of waste streams being valorised and fed back into the production system.

How should the business community address the risk that disruption will create stranded assets and job losses?

Businesses need to accept that these transformations are taking place, and I don't think that this kind of change is anything to be afraid of or to resist.

Stranded assets will undoubtedly be a challenge, but certain capital assets are much more adaptable than one might suppose – an example would be coal-fired power stations moving to biomass.

What can policymakers do to accelerate green economic transformation?

The prizes, awards and grants that bio-bean received were hugely beneficial and enabled the company to get where it is today.

I would advocate for government funds to be distributed as cash for businesses, because this is what early-stage and even scale-up businesses really need.

I think it would also be very encouraging if the government, which is responsible for nearly half of UK spending, could lead the way by procuring goods and services from smaller businesses.

“When you start to see waste differently, there are countless business opportunities waiting to be exploited across every sector

Which other sectors do you think are most ripe for green disruption?

There has been an amazing amount of innovation to tackle organic waste, such as companies redistributing food that would go to waste to communities or vulnerable groups.

When you start to see waste differently there are countless business opportunities waiting to be exploited across every sector. But whether it's green disruption or just disruption in general, the economics have to make sense.

How do you think the business world is going to change by 2050?

I think it will be almost unrecognisable from how it is now. I imagine offices, transportation and communication, which are at the heart of how UK businesses operate, will all be radically changed.

What are the characteristics that lie at the heart of disruptive business models?

Looking at the bio-bean model as an example, I would say that economic viability and scalability of the business model are absolutely key to a successful disruptive business model.

What advice would you give to a green start-up looking to shake up a market today?

I would think that building partnerships and alliances with the particular market they want to shake up is extremely important.

Connect with businesses in the supply chain that wish to improve their environmental performance, and then leverage those partnerships to achieve greater market presence and impact.

Self-belief is also important – the world is moving in the direction of environmental sustainability, so as a green start-up you are swimming with the tide.

What is the secret of your success in disrupting the status quo?

There is no secret! It's a combination of common sense, hard work, having the right team around you, and being agile and able to adapt to changing circumstances.

It's understanding that players in the existing industry do want to be more sustainable, then working out how best to incentivise them to do this.

MELANIE SHUFFLEBOTHAM

ZAPMAP

What does your organisation do and how is it challenging the industry status quo?

Zap-Map is the leading digital electric vehicle (EV) charging platform, enabling EV drivers to locate and navigate to suitable public charge points, and, on the B2B side, providing data and insights to the wider emerging EV ecosystem.

With electrification, automation and the emergence of new models of mobility, digital and data will increasingly be central to the transport industry. Zap-Map provides the digital glue to link the EV drivers, charge points, networks and, in the future, connected vehicles and smart homes.

Why is this disruptive model critical for tackling environmental challenges?

Traditional cars with internal combustion engines are a key contributor to both climate change emissions and air quality issues. Zap-Map has an important role to play in enabling a smooth mass market transition to electric cars and a wider renewable energy ecosystem.

What are the challenges in creating a business and investment case for this approach?

Zap-Map's platform approach means that the core products (Zap-Map app, website and tools) are provided free to end-users, the EV drivers. It monetises the value within the rich data sets we have developed, both EV and charge points, and the EV audience.

Central to our success is building a strong and growing user base which we have achieved among the pioneers and early adopters.

However, as the market for EVs and charging is very dynamic, there are many uncertainties around the final structure of the market and the timing of the shift to the mass market, which in turn impacts investor confidence.

“Make a plan, take some action, launch something even if it is not perfect

How do you build public support for rapid disruption of established business models?

There still seem to be many myths based on vehicles and infrastructure from several years ago. This can be frustrating when there are so many good messages to get out. There is already a public infrastructure in place with over 10,000 charge devices and the new tranche of EVs are available with around 200 miles real range.

However, in the past year there has been a significant shift in consumer attitude towards EVs, and most surveys suggest 50 per cent or more of car buyers think their next car will be an EV.

The challenge will be to communicate the benefits and provide information and tools across the whole car buying process. Zap-Map is playing its part here.



Melanie Shufflebotham is the co-founder of Zap Map, the UK's most comprehensive electric car charging point map.

Shufflebotham has more than twenty years' experience in the areas of technology and marketing.

She is also co-owner of Next Green Car, the UK's No.1 green car website with a mission to help car buyers find, compare and buy a greener, more economical car.



What do you expect your industry to look like in 10 years' time?

All cities will have clean air zones only allowing zero emission driving in city centres. Charging points will be found everywhere, and renting of home and business parking with charge points widespread. Over half of all new cars bought will be electric and primarily bought online, and buying a combustion engine car will be increasingly socially unacceptable.

Young people will learn to drive in electric cars but will rarely buy a new car, instead using the various shared mobility, possibly autonomous, options available. As a result, the amount of real-estate dedicated to parking will be substantially reduced, enabling invigorated, emission-free and pleasant city centres. We can dream!

My hope is the business world will be transformed into a more flexible, dynamic, diverse place

How should the business community address the risk that disruption will create stranded assets and job losses?

As with other industries, the UK's automobile sector should focus on developing high value design, digital, technology and information management skills, with the accompanying training and education to create a vibrant high tech green economy.

What can policymakers do to accelerate green economic transformation?

Policymakers can continue the current system of EV grants for battery electric vehicles and charging grants, and commit to following through on all the policies laid out in the Road to Zero plan. This would put the UK at the forefront of the transition to electric vehicles.

More broadly, many companies doing exciting things in the green industry are small and entrepreneurial – the industry would benefit from more flexible central support for small, nimble companies, which is easier to access and not solely early stage R&D focused.

Which other sectors do you think are most ripe for green disruption?

One of the fun things about working in the EV world is the coming together of the transport, energy and data worlds.

There is already so much good work going on and I look forward to the day when it is standard for businesses and homes to be efficiently managing a combination of renewable energy and battery storage linking to the electric car.

How do you think the business world is going to change by 2050?

My hope is that the business world will be transformed into a more flexible, dynamic, diverse place with sustainable business practices at the core of every company.

Standard corporate structures with nine-to-five jobs will be very rare, boards will no longer be predominantly white and male, and flexibility will be hard-wired into all businesses.

This, combined with affordable child-care will mean more people, particularly women, will be able to use all their skills and there will be a better work-life balance for all.

What advice would you give to a green start-up looking to shake up a market today?

Find something that no one else is doing, talk to people in the market and identify the specific area where you can create a vision and thrive.

Plan for everything taking much, much longer than you ever imagine; not only in building the proposition and product, but also the decision-making process by potential investors and clients.

Finally, plans are made to change – make a plan, take some action, and launch something even if it is not perfect.

What is the secret of your success in disrupting the status quo?

Since the market gap was first identified back in 2012, Zap-Map has had a laser focus on the needs of the EV driver.

By being early to market, Zap-Map has been able to extend the product and services offered whilst embedding itself within the zero emission ecosystem.

Now, the challenge is to maintain and grow this position as larger corporates enter the fray.

EHAB SAYED

BIOHM

What does your organisation do and how is it challenging the industry status quo?

Biohm is a research and development-led company which aims to revolutionise the construction industry through the development of bio-based materials, circular construction systems and a range of services.

By using biological systems and combining circular economy and human-centred design principles, we want to create a step-change in construction materials and building methods.

Why is this disruptive model critical for tackling environmental challenges?

Given the construction industry's global impact on the environment, resource depletion and human health, discreet changes and slight improvements simply aren't enough. The entire industry needs to harness circular approaches and tackle climate change more holistically.

Disruptive collaborations supported by the public sector and driven by our environmental, social and economic needs are our best chance to positively affect the wellbeing of our planet and its inhabitants.

What are the challenges in creating a business and investment case for this approach?

Radical solutions and technologies require innovative business models that foster the ideal ecosystem for success.

The integration of biological systems and living organisms into manufacturing, for example, allows us to consume waste and carbon during production whilst drastically cutting costs.

“Discreet changes and slight improvements simply aren't enough

This process demands new business models that transform sourcing processes into revenue streams, such as payments for waste collection rather than paying for raw materials.

For example, our mycelium insulation uses self-multiplying organisms and waste as raw material and can achieve considerable manufacturing savings.

The construction industry is one of the UK's largest, and sustainability legislation is tightening. By developing agile materials and products that can be reproduced around the globe using only local resources, Biohm capitalises on this opportunity.



Ehab Sayed is the founder of Biohm, a London start-up which has developed a revolutionary construction system dubbed 'Triagomy', which does not require permanent binders or fasteners to create robust structures.

Sayed, an engineer and entrepreneur, founded Biohm with a mission to make our built environment healthier and more sustainable by pioneering bio-based materials and circular construction systems.



How do you build public support for rapid disruption of established business models?

Engaging with the private, public and third sector is absolutely crucial for building public support. This is particularly true within a complex industry like construction. In order to implement change, a holistic perspective is needed to address issues in collaboration with multiple parties.

The power of social media is underestimated. Engaging a wide audience on topics that personally affect every individual on the planet is a great way to form partnerships and create champions for your cause.

“The power of social media is underestimated

What do you expect your industry to look like in 10 years' time?

The construction industry will be one of the most exciting and forward-thinking industries in 10 years' time. It is currently experiencing a period of crisis, which usually leads to transformative action and opens the door to disruption.

A cross-industry bio-revolution is bubbling up under the surface, which is raring to offer a wide range of revolutionary bio-technologies. A cutting-edge construction sector with integrated bio-technologies could well be on the horizon.

The construction industry has experienced few significant transitions over the last 40+ years. It's time for it to catch-up with others, setting an example for new, transformational business models.

How should the business community address the risk that disruption will create stranded assets and job losses?

Disruption that results in stranded assets and job losses is neither sustainable nor holistic. It is crucial to ensure that the impact of disruption and all of its negative outcomes are closely considered and mitigated where possible.

For example, disruption results in job loss for brick-layers and, from an ethical perspective, the disruptor is responsible for ensuring that they experience a smooth career transition. Public sector support is very important here.

What can policymakers do to accelerate green economic transformation?

Policymakers are among the most influential stakeholders and it is their duty to push and challenge the industry. Unfortunately, mixed motives and lobbying by influential stakeholders tend to influence policymakers.

Standards, regulations, policy and industry players should be in nearly constant competition, striving to achieve the most sustainable products and outcomes.

Which other sectors do you think are most ripe for green disruption?

Food and fashion, because they appear to have slipped under the radar in past decades when looking at waste reduction or environmental impact.

Food waste is one of the fastest growing waste streams in Europe and other developed economies.

The fashion industry generates excessive non-recyclable waste, and this is especially the case with high-end and fast fashion.

The broad impact of these industries on a global scale certainly calls for disruption, especially with regards to production and sourcing.

How do you think the business world is going to change by 2050?

The business world will become more ethical or more skilful as public environmental and economic awareness grows. Corporations will be compelled to uphold their share of the social contract as a result of public demand, and laws and regulations will reinforce this.

All companies will be powering their operations with clean energy and many will be net positive.

What are the characteristics that lie at the heart of disruptive business models?

Risk-taking, determination, passion, courage, systems-thinking, innovation, creativity and compassion.

What advice would you give to a green start-up looking to shake up a market today?

Have a solid philosophy and ethos that influence everything you do as a company. Also, make sure to consider all stakeholders and collaborate with your biggest drivers and barriers.

What is the secret of your success in disrupting the status quo?

My secret is staying true to our philosophy and having a sensible balance between our social, environmental and economic aims.

JAMES THORNTON

CLIENT EARTH

What does your organisation do and how is it challenging the industry status quo?

ClientEarth uses law to protect people and the planet. There is enormous power stored up in the law, and we use it to look for practical solutions to environmental challenges.

Our method is to work on laws throughout their lifetime, from the earliest policy stages to implementation – and when they are broken, we go to court to enforce them. When ClientEarth started a decade ago, this model was new to Europe. We now have offices in London, Brussels, Warsaw, New York City and Beijing.

Our work to protect people from dirty air has forced local, regional and national governments to innovate and has helped accelerate the move to cleaner vehicles. We currently have 30 air pollution cases going on across Europe and we are winning them all.

Why is this disruptive model critical for tackling environmental challenges?

The environmental movement in Europe evolved by campaigning, but when allied with law, it gains much greater power.

We forced the UK government to take action on air pollution and we stopped Bialowieza, a primeval forest in Poland, from being decimated – both through the combination of the courts and campaigning.

While climate change seems remote to people, dirty air is in their face, lungs and children. They are upset by it and want change. By cleaning up sources of air pollution, you clean up major sources of climate change.

What are the challenges in creating a business and investment case for this approach?

Our work is philanthropically funded. When we help write laws in Brussels, train judges and prosecutors in China, or bring cases to tackle dirty air, we are performing public services that no one will pay for.

If you are interested in changing the world, investing in this work is extremely high-leverage. We are a charity, but a charity is just a particularly tough form of business to make successful, both in terms of funding and output. Our product is social good: a better environment, better access to justice for citizens and better rule of law.

“We can have the time of our lives reinventing our civilisation

We have a range of charitable trusts, foundations and individuals who see us as a good philanthropic investment, and we are backed up by considerable proof of our effectiveness. We win cases that change behaviour and we help write laws that make a difference.



James Thornton is the founder and chief executive of ClientEarth. The award-winning environmental law firm was established in 2007 and uses advocacy, litigation and research to address environmental challenges, including biodiversity loss, climate change, and chemical pollution.

Thornton is also a successful novelist and a conservation fellow of the Zoological Society of London, and in 2012 he was named by The New Statesman as one of ten people who could change the world. In 2016 he was also named BusinessGreen's Leader of the Year.



How do you build public support for rapid disruption of established business models?

Communicating what we do is a key part of it. People are happy to have us on their side. They find it inspiring that a small group of people can have this much impact.

When myself and Martin Goodman, co-author of our book *Client Earth* and also my husband, give presentations on our book tour, people tell us, “environmental problems are so big that I’d lost hope, but you’ve given hope back to me.”

“If you are in a high carbon business as an owner or an investor, look for the exit now

What do you expect your industry to look like in 10 years’ time?

I expect there will be more lawyers working inside environmental charities because it is so effective.

Also, I am certain there will be a great deal of activity focused particularly on the use of litigation to attack the sources of climate change. We have proven the model and funders are interested. I anticipate us working in partnership to help build the capacity of teams of lawyers globally.

How should the business community address the risk that disruption will create stranded assets and job losses?

Get ahead of the curve. Our work touches energy, motor and finance sectors, among others. Change is coming in all of these areas – the Paris Agreement makes it inevitable.

If you are in a high carbon business as an owner or an investor, look for the exit now. It’s not too late to get out whole, but it will be soon.

What can policymakers do to accelerate green economic transformation?

Policymakers can stop subsidising fossil fuels and tax their carbon emissions. Wind and solar are now as cheap as coal. So put a meaningful CO2 tax on coal, and it disappears quickly. Of course, retraining coal workers must be part of the package.

Then get real about Paris Agreement commitments. Every country needs to come up with its own pathway to emissions reductions and green development. This has not happened yet, and it needs to quickly.

Which other sectors do you think are most ripe for green disruption?

Beyond energy and transport, we need to green all industry, agriculture and investment. The good news is that, if we do, the inevitable disruptions from climate change we already face can be mitigated.

We can have the time of our lives reinventing our civilisation.

How do you think the business world is going to change by 2050?

Some things are clear, but much is hard to predict. Clearly artificial intelligence will have an enormously disruptive impact. It will build new opportunities and create new jobs, also dislocate millions of workers.

Beyond that, the question is how much the climate will have changed. It’s hard to predict. By then, society may be coping with the collapse of states – particularly in Africa, mass migration and food shortages. Business will have to cope too.

What are the characteristics that lie at the heart of disruptive business models?

Search for an empty space for your ideas. You then test the space to see if it nourishes you personally. Does your idea have real value that will give you and others meaning? Will others buy in, intellectually, emotionally and financially? If the idea has these characteristics, then try it out: see if it works; see if it disrupts.

What advice would you give to a green start-up looking to shake up a market today?

Be bold and agile. My first idea was to work within existing UK environmental organisations. They lacked appetite for this way of working, so I changed tack and struck out on my own. I was new to the EU, with few friends and little money.

Today, ClientEarth has nearly 150 employees across the world, and growing. I didn’t know it would be this way. It has grown organically and still has the excitement of a tech start-up.

What is the secret of your success in disrupting the status quo?

I try to understand fundamental societal problems, what needs to change and then, in very practical terms, how to bring about those changes. Deep analysis gives you the goal. Bloody-minded pragmatism takes you there.

PETER DAVIES

VERV

What does your organisation do and how is it challenging the industry status quo?

Verv has created a peer-to-peer renewable energy trading platform that's based on the blockchain. It leverages the power of Artificial Intelligence (AI) and machine learning in the Internet of Things (IoT) hub that we've built, which sits in the home.

It challenges the status quo by enabling consumers with solar panels on their roofs to sell any excess energy that they generate directly to their neighbours at the best economic value for both parties.

“Policymakers must embrace new and disruptive technology that can help to transform the energy industry

Why is this disruptive model critical for tackling environmental challenges?

Our energy trading platform improves access to affordable, green energy for the masses, encouraging wider use.

In parallel, it incentivises the uptake of renewables by enabling households with solar panels or other sources to get payback on them, thus increasing the return on investment.

With the government having announced that it intends to remove the Feed-in-Tariff in April 2019, it's crucial that other incentives are put in place so that the uptake of renewables continues to grow.

What are the challenges in creating a business and investment case for this approach?

The markets that we are tapping into are huge and crying out for technology of a disruptive nature to fix a number of problems.

Our technology extends beyond energy trading, providing big energy players with crucial services such as grid balancing and much more.

We are unlocking rich data that is of enormous value, and, on top of that, we want to empower consumers to monetise it.

The key challenge is to prove that the solution works at scale and that regulatory barriers that inhibit commercialisation are unlocked.

How do you build public support for rapid disruption of established business models?

By proving that we can save up to 30 per cent on their existing bills with a light touch interaction, we have already seen significant interest from both the public and private sector.

Once regulation has been established, I believe people will be more comfortable with using disruptive technology like this, especially once they understand the benefits.



Peter Davies is the founder and CEO of Verv, the clever home energy assistant. Verv delivers a home energy system that uses cutting-edge AI technology to identify appliances in your home by their unique energy signatures and tells how much each one is costing to use – all in real-time. Verv simultaneously saves on electricity bills and reduces excessive energy consumption.

In addition to Verv, Davies founded Austin Consultants in 2005, a consultancy specialising in engineering solutions.

He won Innovator of the Year in the 2016 Business Green Technology awards.

verv

What do you expect your industry to look like in 10 years' time?

The energy industry will be a completely different world in 10 years' time!

I believe the customer will at long last be at the centre of the industry with genuine service offerings being provided.

I expect a significantly larger proportion of our generation capacity to be renewable, with a far more energy-conscious consumer base, and likely even completely self-sustaining communities.

How should the business community address the risk that disruption will create stranded assets and job losses?

The business community is very aware of the paradigm shift ongoing in the industry. By getting on board with the evolution as it happens, the individual impact can be minimised.

What can policymakers do to accelerate green economic transformation?

Policymakers must embrace new and disruptive technology that can help to transform the energy industry, providing as much support as possible for those developing breakthrough technology that will help the UK to significantly reduce its carbon emissions.

Which other sectors do you think are most ripe for green disruption?

The automobile industry is especially ripe for green disruption and we are only just beginning to see the true impact that this will have on our lives with the proliferation of electric vehicles.

These will play a major part in the energy transition as we see models emerge that are simply not possible right now.

How do you think the business world is going to change by 2050?

By 2050, I think we will be seeing a completely different way of working and interaction. There is likely to be a significant reliance on AI and the automated workforce.

What are the characteristics that lie at the heart of disruptive business models?

At the heart of a disruptive model is the ability to actually bring something to market, bringing the passion and drive to overcome the hurdles and challenges that you'll face along the way.

You can have the best idea in the world but it will never work unless you have the determination to take it through the journey needed to make it real.

There has never been a better moment to try and shake up the market

What advice would you give to a green start-up looking to shake up a market today?

The time is now! The industry is going through a huge change with a focus on decarbonisation, decentralisation and digitisation.

There has never been a better moment to try and shake up the market.

What is the secret of your success in disrupting the status quo?

A team that wholeheartedly shares your vision and brings passion and determination to everything they do is key when you're looking to make such radical changes to an industry and its entrenched business models.

SARAH MERRICK

RIPPLE ENERGY

What does your organisation do and how is it challenging the industry status quo?

Ripple Energy's vision is a renewable energy future owned by people, not companies. We will enable people – ordinary domestic households – to collectively own onshore wind farms and be supplied by the low-cost electricity they produce.

People no longer need utilities to build renewables, nuclear or gas plants and supply them with electricity. They can do it for themselves.

Why is this disruptive model critical for tackling environmental challenges?

Incremental change and tinkering around the edges just will not cut it. The world needs a scalable way to deploy renewables on a subsidy-free basis, and our model can deliver that. It mobilises consumers' capital in the fight against climate change.

What are the challenges in creating a business and investment case for this approach?

People love onshore wind and they want low electricity bills. Onshore wind is the UK's cheapest source of electricity, which makes a very compelling investment case. We think demand is going to be really strong.

The challenge lies in finding a way for our co-owners' electricity bills to reflect their wind farm ownership of the wind farm. Customer billing systems aren't necessarily designed with generation ownership in mind.

How do you build public support for rapid disruption of established business models?

Ripple is creating a totally novel customer proposition. We need to explain it really simply so people understand it and to also provide enough detail to those who want it.

We're focusing on early adopters first. They are more receptive to new ideas and want to help us make it work.

What do you expect your industry to look like in 10 years' time?

We want to transform large-scale wind energy from being a business-to-business industry to a business-to-consumer one. That's a huge change.

I think that in 10 years the whole energy market will be much more diverse with people playing a far more central role. People will be able to decide how they get their electricity, not simply which company will supply it.

Tinkering around the edges just will not cut it



Sarah Merrick is the founder of Ripple Energy, an energy company that seeks to create a renewable energy future owned by people and not big energy companies.

Ripple Energy provides co-owned onshore wind farms through the Community Benefit Society, and the members – i.e. households – are able to draw on the energy supply produced by the development.

Merrick has worked in renewable energy for 18 years, including as vice chair of the board of directors for RenewableUK, one of the UK's leading renewable energy trade associations.



How should the business community address the risk that disruption will create stranded assets and job losses?

The transformation of the energy sector will create loads of opportunities. Both companies and people need to be flexible and adaptive. I've worked with ex-soldiers who moved into wind turbine maintenance.

Sometimes you get really unexpected crossovers in skill sets, but you might need to dig a bit to find them.

“People no longer need utilities to build renewables, nuclear or gas plants and supply them with electricity. They can do it for themselves

What can policymakers do to accelerate green economic transformation?

Do the really obvious, no-brainer stuff immediately. For example, requiring new homes to be hyper energy efficient, not blocking new onshore wind projects and banning non-electric car sales from 2030.

Policymakers need to make the transformation something to embrace, not something to fight against.

Which other sectors do you think are most ripe for green disruption?

Finance. It has moved so slowly while the climate science signals have been so clear.

How do you think the business world is going to change by 2050?

I'd like to think that sustainability will become baked into business models because it makes economic sense, not just reputational sense.

Ultimately, we can't rely on the goodwill of companies to protect the environment – we need a market framework that properly prices in the environment. We shouldn't need to wait until 2050 for that to happen.

What are the characteristics that lie at the heart of disruptive business models?

Really disruptive ideas need to make people think, 'of course that's how you do it!' It also has to be the right time. We couldn't have done Ripple five or 10 years ago, as onshore wind wasn't yet cheap enough.

What advice would you give to a green start-up looking to shake up a market today?

Go for it. It's not going to happen unless you do it.

What is the secret of your success in disrupting the status quo?

I waited for the right idea and the right time then totally went for it. Also, listening to and learning from what people say has really helped.

I've not been afraid to tweak the model, whether it's after discussing something with colleagues, suppliers or our amazing advisory board.

“Really disruptive ideas need to make people think, 'of course that's how you do it!'”

PAUL SIMPSON

CDP

What does your organisation do and how is it challenging the industry status quo?

CDP's mission is to focus investors, companies and cities on taking urgent action to build a truly sustainable economy by measuring and understanding their environmental impacts.

Eighteen years ago, we set out to transform capital markets using the power of transparency and data. We do this through our disclosure system, data analysis and expert insights.

In 2018, we collected environmental data from over 7,000 companies with 55 per cent of global market capitalisation as well as from over 750 cities, states and regions. This was on behalf of over 650 investors with assets of \$87tr, and 115 big purchasers who ask their suppliers to disclose.

Why is this disruptive model critical for tackling environmental challenges?

You can't manage what you don't measure. Once companies and cities know where their key impacts, risks and opportunities lie, they can focus their resources effectively.

Only with this transparency can investors, customers and governments support more sustainable business.

Disclosure is the fundamental foundation of a sustainable economy and it is well on the way to becoming a business norm.

What are the challenges in creating a business and investment case for this approach?

The most persuasive point is companies' investors and biggest corporate customers want them to disclose. Measuring and managing environmental risk, sharing progress with stakeholders and getting ahead of regulation are other benefits.

Investors are concerned with material risk in their portfolios and the threat of stranded assets. Many consider over-exposure to high-carbon stocks to be risky due to physical environmental impacts and low carbon shifts in the economy.

“It's so crucial to have a strong mission and story to inspire people

How do you build public support for rapid disruption of established business models?

As surveys have shown, there is already significant public appetite for bold climate action by companies, cities, investors and governments. Consumers increasingly want transparency and more sustainable products and services.

People also have more pride in their jobs at more sustainable companies. Citizens are interested in clean air, green space, clean, secure and affordable energy and jobs in new green industries. These are all benefits of climate action.



Paul Simpson is the CEO of CDP, formerly the Climate Disclosure Project. CDP runs the global disclosure system that enables companies, cities, states and regions to measure and manage their environmental impacts, and it has done so by building the most comprehensive collection of self-reported environmental data.

Simpson has been with CDP since it started in 2000 and has led its work from being climate-specific to other environmental areas. He currently sits on the advisory panel of Guardian Sustainable Business and the Global Stranded Assets Advisory Council for the Smith School of Enterprise and the Environment at Oxford University.



What do you expect your industry to look like in 10 years' time?

Environmental reporting is fast evolving. Disclosure in line with the TCFD recommendations will keep growing.

We expect to see environmental data more often integrated into mainstream financial reports, with greater balance between financial and non-financial information, as well as more investors and other financial institutions disclosing their own impacts.

We also expect more holistic understanding of environmental risk, covering water security, deforestation and climate impacts.

How should the business community address the risk that disruption will create stranded assets and job losses?

There will be winners and losers. There is a real risk of stranded assets and potential job losses in certain sectors. Companies need to shift to low-carbon business models, tackling their energy usage and supply chains and setting science-based targets to guide them.

Investors need to address exposure to high-carbon assets and capitalise on the growing green economy. The benefits of action – innovation, brand value and new markets – will far outweigh the costs.

What can policymakers do to accelerate green economic transformation?

Corporations, investors, cities and states need ambitious policies in place – mandatory, high-quality environmental disclosure is a crucial step.

Policymakers should also push for economy-wide carbon prices rising in line with science, as well as boosting renewables and energy efficiency.

California's 2045 target for 100 per cent clean electricity is a great example.

Which other sectors do you think are most ripe for green disruption?

Energy, construction, automotive, and agriculture sectors are certainly all ripe for transformation – and will be disrupted – either proactively through innovation or destructively through climate impacts.

Encouragingly, many companies in these sectors are setting science-based targets. Potentially less obvious is the capital goods sector. As the makers of the heavy machinery that underpins other sectors, they have a powerful leverage role to play in the transition.

By 2050, environmental action will be as important as financial performance

How do you think the business world is going to change by 2050?

Climate change is going to transform the global economy and the way people do business. By 2050, environmental action will be as important as financial performance, with environmental data considered alongside financial data in investment, procurement and strategy decisions.

Bolstered by science-based targets in their strategies, companies will be operating at, or close to, zero emissions.

All companies will be powering operations with clean energy and many will be net positive.

What are the characteristics that lie at the heart of disruptive business models?

We need to focus on what future solutions the world needs, rather than what made money in the last decade. We need to think outside the box and question assumptions – just because something has always been done a certain way doesn't mean there isn't a better alternative.

Being bold, taking risks and leveraging multiple changes in the economy from technology, new regulation and shifting consumer sentiment. What Christiana Figueres likes to call "stubborn optimism" is very important.

What advice would you give to a green start-up looking to shake up a market today?

My advice is to look at economic trends and to the future to get ahead of the curve. Be nimble and ready to try new things – that's one of the few ways a small start-up has an advantage over a big company.

I think it's so crucial to have a strong mission and story to inspire people and get buy-in from your staff, customers and investors. Be transparent, as this builds trust.

What is the secret of your success in disrupting the status quo?

Staying focused and never giving up. Using the power of data and transparency as a foundation to spark action globally is what has made CDP so impactful. Getting the backing of investors was absolutely key to this – we headed straight for this key leverage point, and we had to speak their language to do so.

I remember going to a meeting to introduce CDP with an investor when we'd just launched. They said, "sorry, we can't talk about ethics, that's not our job." And I said: "Don't worry – I'm here to talk about risk." That opened up the conversation.

MATT ALLEN

PIVOT POWER

What does your organisation do and how is it challenging the industry status quo?

Pivot Power is developing a world-first national network of grid-scale batteries and rapid electric vehicle charging stations to support a cost-effective, reliable, low-carbon energy system and enable the rapid adoption of clean transport.

We plan to install a 2GW battery storage network linked to National Grid sub-stations, helping to future-proof the UK energy system and enable it to support higher levels of renewables and mass EV charging.

“Be prepared if some people want you kicked out of the party

Why is this disruptive model critical for tackling environmental challenges?

The electrification of transport is widely agreed as essential to allow the UK, and clearly further afield, to achieve our climate targets.

Air pollution is also a material risk to the overall quality of life, particularly for those living in larger urban environments.

What are the challenges in creating a business and investment case for this approach?

We focus on market fundamentals and the ‘investability’ of our portfolio by demonstrating robust, sustainable returns for financial investors with a focus on the long-term.

How do you build public support for rapid disruption of established business models?

State the facts. For example, electric cars could be cheaper than petrol and diesel cars by 2020 and make up a third of the road transport market by 2035. And air pollution in the UK causes 40,000 early deaths and costs £20bn every year. MPs are calling on the government to bring forward the ban on sales of new petrol and diesel cars from 2040.

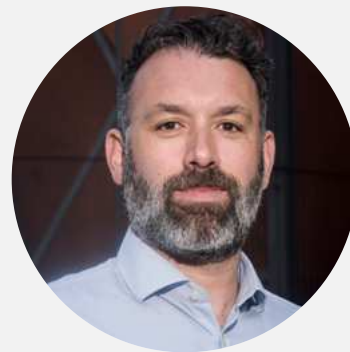
What do you expect your industry to look like in 10 years’ time?

In the electric vehicle sector, we will be well ahead of the government’s 2040 ban of new sales of internal combustion engine vehicles.

In the energy market, the increased deployment of renewables onto the grid will continue to present challenges for network operators, but heighten and reinforce the requirement for battery storage.

How should the business community address the risk that disruption will create stranded assets and job losses?

There needs to be a proactive adoption from the business community, especially with the incumbents, to embrace market disruption – no matter how much it may hurt current business interests.



Matt Allen is the CEO of Pivot Power, the company that is developing the world’s first national network of grid-scale batteries and rapid EV charging stations. Their development will help to support a cost-effective, reliable, low-carbon energy system that will enable the rapid adoption of clean transport in the UK.

Allen is also the founder and CEO of Become Energy, a developer, funder and asset manager of battery storage projects for large energy consumers.



**pivot
power**

What can policymakers do to accelerate green economic transformation?

We need firm, clear policies that incentivise the shift to low carbon technologies, both for businesses and the public.

We also need intervention where they see market failure and an opportunity to fast-track sustainable and low-carbon technologies.

When you have a clear vision you need to communicate it effectively

Which other sectors do you think are most ripe for green disruption?

The built environment, particularly with commercial and industrial corporates. Also, sea and air transport.

How do you think the business world is going to change by 2050?

Every single company will have a clearly stated corporate social responsibility agenda that will be measured and scrutinised on a very regular basis. The heat is going to be turned up regarding corporate ethics.

What are the characteristics that lie at the heart of disruptive business models?

Bravery, resolve and creativity. A belief that inclusion and participation from the many will be essential in this 'new world paradigm' which is filled with transparency, uncertainty and a general expectation that 'doing the right thing' is not only appropriate, but essential.

What advice would you give to a green start-up looking to shake up a market today?

Smile and be humble, while you try to disrupt. Don't grit your teeth and be aggressive. That (typically) won't get you very far.

Have the confidence and conviction that what you are doing is right, but also appreciate that disruption will inevitably impact people.

What is the secret of your success in disrupting the status quo?

Your greatest strengths are also your greatest weaknesses, and your greatest weaknesses are also your greatest strengths. Embrace that fact!

You don't have to be invited to the party. Sometimes if you show up to a black-tie gig, where everyone is drinking champagne and talking about 'making money', and you have on some ripped jeans, an old t-shirt, flip flops and a can of Bud in your hand and are talking about 'making a difference', those at the party may embrace you and even, dare I say, speak to you.

But, be prepared if some people want you kicked out of the party.

Authenticity can get you really (really) far – so don't be afraid to make yourself vulnerable. And at the same time dream – life is too short not to!

Authenticity can get you really far – so don't be afraid to make yourself vulnerable

CHRIS GUBBEY

LEVC

What does your organisation do and how is it challenging the industry status quo?

For over 70 years, London Electric Vehicle Company (LEVC) has built the iconic London black taxi. In 2013, the business was bought by GEELY and a plan was put in place to breathe new life into this famous vehicle.

In 2017, we re-named the organisation the London Electric Vehicle Company (LEVC) to reflect our new strategy of expanding our markets and product range. At the start of 2018, we launched the all-new electric London taxi, the TX.

Why is this disruptive model critical for tackling environmental challenges?

From January 2018 all new official London taxis had to be zero emission capable, which means having CO2 emissions of no more than 50g per km and a minimum zero emission range of 30 miles. These standards have been designed to improve air quality in the capital city and are among the toughest standards of all major cities globally.

The new LEVC TX exceeds these criteria with CO2 emissions of 29g per km and an electric-only range of around 80 miles. That makes it the perfect export vehicle: a purpose-built, zero emission capable taxi that can play a key role in any major city in helping to reduce pollution and improve air quality.

We have already announced plans to make a van based on the same platform as the TX.

What are the challenges in creating a business and investment case for this approach?

The business case is simple: urban population is set to double between now and 2030 and air quality has never been more on the agenda.

By offering the new electric taxi and, in 2019, a van based on this technology, we have the export vehicles to meet demand.

We have already launched the TX taxi in Norway, the Netherlands and Germany, and these markets have been incredibly receptive to our product – we expect the same in other markets too.

“We have taken an iconic vehicle and we have redesigned it for the 21st century

How do you build public support for rapid disruption of established business models?

The funny thing is that our product is an established business model, and one that is universally recognised the world over as trusted.

The change is that it is now the world's most advanced taxi, and by re-inventing this iconic vehicle, we are confident that the public will love it, no matter the city.



Chris Gubbey is the CEO of London Electric Vehicle Company (LEVC), the company that builds the iconic London black taxi. Earlier this year it launched a new electric London taxi, and is working on a new electric van.

CEO of LEVC since July 2016, Gubbey has decades of automotive experience including as manufacturing director at Vauxhall in the UK. He has also worked at a senior level with General Motors in China, Germany and Russia.



What do you expect your industry to look like in 10 years' time?

With increasingly tight regulation of emissions in cities and consumers looking for access to transport services on demand – without necessarily owning a private car – we see a growing demand for urban transport services.

Some say that fully autonomous vehicles are the future of taxis, but in our view, there is no substitute for a highly trained and trusted driver.

In the world of vans, we see major change too. Internet shopping has created a demand for delivery vehicles working 24/7, and there's no doubt those vehicles need to be purpose-built and zero emission capable.

How should the business

By 2050, all road transport will be either zero emissions capable or completely zero emissions

community address the risk that disruption will create stranded assets and job losses?

What's important is that we transition to electric vehicles in a way that doesn't destroy economic or social value.

That's where government has a key role to play in providing purchase incentives – supporting delivery of charging infrastructure and providing targeted scrappage schemes to protect asset values and enable upgrades to newer vehicles.

We need to get the right balance between carrot and stick to ensure we can all benefit from this technology.

What can policymakers do to accelerate green economic transformation?

We can only speak for our industry, but London has been extremely forward-thinking in its approach regarding taxi emissions standards. Other cities are already following its lead.

Policymakers need to be brave – and to work with industry – in making new regulations that not only bring positive environmental change, but encourage public demand for change.

All road transport in cities will be emissions-free, which has the power to transform the urban environment from a clean air and noise perspective

Which other sectors do you think are most ripe for green disruption?

Transportation, and specifically urban commercial transportation, is clearly ripe for disruption. But while road vehicles come under tight regulatory control, other sectors need to play their role too in order to move the dial across the whole economy.

How do you think the business world is going to change by 2050?

We believe that by 2050, all road transport will be either zero emissions capable or completely zero emissions.

All road transport in cities will be emissions-free, which has the power to transform the urban environment from a clean air and noise perspective.

How we work and interact could also change significantly, having profound implications for city planners and transport networks.

What are the characteristics that lie at the heart of disruptive business models?

Genuinely doing something different and fitting into consumers' lives so well that you become indispensable.

What advice would you give to a green start-up looking to shake up a market today?

Be focused in your approach, clear on your short and longer-term objectives and be flexible in your delivery as the business environment inevitably changes.

Try to get the support of as many stakeholders as possible, and don't give up!

What is the secret of your success in disrupting the status quo?

There is no secret. We have taken an iconic vehicle – which we have been building for the last 70 years, remember – and we have redesigned it for the 21st century.

SAKER NUSSEIBEH

HERMES

What does your organisation do and how is it challenging the industry status quo?

Hermes is a responsible investor. We seek holistic returns: outcomes for clients that go far beyond the financial and consider the impacts our decisions have on society, the environment and the wider world.

As time has gone on, our clients' approach to sustainable investing has changed significantly. Initially, they adopted the strategies simply for their investment outperformance, but now they come to us because they're looking for ESG integration, as this can enhance performance and returns and provide positive social and environment outcomes.

Earlier this year we launched a carbon tool for our fund managers and engagers to use in order to make enhanced investment decisions and to better inform engagement activities with companies on ESG matters.

“Capital markets have a key role to play in turning ambition into action on climate change

Why is this disruptive model critical for tackling environmental challenges?

Our new carbon tool is powerful in delivering real-time and specific carbon information to fund managers and engagers alike.

Assessing carbon risk helps identify investment opportunities and threats to value, and whether to begin or intensify engagements that can reduce the risk of holding exposed companies.

What are the challenges in creating a business and investment case for this approach?

Evaluating the impacts of climate change and assessing carbon risk presents a mammoth challenge for investors.

The scale of the task ahead is evident: in 2013, Trucost put the cost of GHG emissions from business activities at \$2.7tr.

Despite the majority of asset owners perceiving climate change as a major investment theme, a recent PRI study found only 17 per cent of asset owners incorporate both carbon and climate impact risk within their asset allocations. The case for change is clear.

How do you build public support for rapid disruption of established business models?

Capital markets have a key role to play in turning ambition into action on climate change. A number of investor frameworks and initiatives have launched to build support for and accelerate the transition to a low-carbon economy. We are members of the Transition Pathway Initiative, the Montreal Pledge, and Climate Action 100+, among others.

We have also committed to support the Task Force on Climate-Related Financial Disclosures guidelines.

We believe they could be a gamechanger, as they enable all investors to make more informed decisions that take into account climate risks and opportunities.



Saker Nusseibeh is the CEO of Hermes, a leading US investment manager with £35.5bn in assets under management and £346.3bn in assets under advice. He is responsible for leading the firm's growth strategy and for ensuring its long-term investment performance.

Earlier this year Hermes launched a new Carbon Tool to help its fund managers assess their fund's carbon performance and carbon risk. The tool uses greenhouse gas emissions data to assess the carbon impact and climate risk of a portfolio. Hermes hopes it will help shift the behaviour of its fund managers towards more climate-friendly positions. In the coming months Hermes plans to launch more such tools covering governance issues, water management, and social issues.



What do you expect your industry to look like in 10 years' time?

The financial industry will evolve quite dramatically over the next 10 years. The influence of technology, big data and artificial intelligence will have direct consequences for how investment decisions are made and how companies' fundamentals and future profitability are assessed.

Big data on the sustainability performance of companies will become an ever more important source of valuable information for fund managers and investors.

“Businesses should be aware of the possibility that entire industries could cease to exist

How should the business community address the risk that disruption will create stranded assets and job losses?

With significant challenges like climate change, urbanisation, technological advancements and increased automation, almost all sectors will be exposed to disruption.

Therefore businesses should be aware of the possibility that business models will become stranded and that entire industries could cease to exist.

In order to sustainably succeed in the face of a disrupted industry, businesses should consider how to implement disruptive business models whilst protecting and enhancing their stakeholders' interests. Failing to do so might reap financial rewards in the short term, but are likely to come back to bite them longer term.

What can policymakers do to accelerate green economic transformation?

Policymakers can and are doing a lot. They are now requiring the investment industry to rethink the notion of 'value' by placing an ESG overlay on the investment process and stretching the time horizons over which investment decisions are considered. This brings the green economy into sharp focus.

Although long overdue, this is now happening both at the EU and UK level. We think the measures being considered by the EU in particular have the potential to shift asset allocation and accelerate the green economic transformation.

Which other sectors do you think are most ripe for green disruption?

Those most affected by carbon emissions, water shortages, resource depletion and pollution. We are seeing this already in the automotive and utilities industries with the move to use of renewable technologies.

How do you think the business world is going to change by 2050?

By 2050, more sectors will be less reliant on physical human capital. Many jobs as we know them today will become obsolete.

However, while automation and technology will influence the future business world, many decisions will still be made by humans – skilled workers who have the experience and skill sets to make important decisions to move businesses forward.

What are the characteristics that lie at the heart of disruptive business models?

At the heart of a successful disruptive business model is an enhanced customer service and/or at a lower cost through the use of technology.

For example, TomToms disrupted printed maps by working out the best route for the driver and then Waze disrupted TomToms by incorporating live driver and traffic data in identifying the best route. Technology was key and an enhanced customer service was the result.

What advice would you give to a green start-up looking to shake up a market today?

Start-ups today should realise the demands they are serving now will be quite different in a green economy.

Start-ups would be best placed to focus on how they will serve the objectives of the green economy.

What is the secret of your success in disrupting the status quo?

All of our funds are ESG aware and integrate ESG information. This sets us apart.

The integration of sustainability measures and the reaction of companies and assets to our engagement aims, we believe, gives us a more complete picture of the companies we invest in.

Investing to be world leaders in stewardship has been critical in allowing us to meet this aim.

EMILIE VANPOPERINGHE

ODDBOX

What does your organisation do and how is it challenging the industry status quo?

Oddbox is London's first and only fruit and veg box delivery scheme focusing purely on wonky and surplus produce.

We work with over 35 local growers to source slightly imperfect but equally delicious produce for a fair price directly from farms.

We deliver it straight to customers for 30 per cent cheaper than similar box services. We also donate up to 10 per cent of our produce to charities that fight food poverty.

It is the business community's responsibility to embrace change and prepare for it

Why is this disruptive model critical for tackling environmental challenges?

Food waste isn't just about food – it has huge environmental consequences as well.

If the global amount of food we waste was a country, it would be the third largest emitter of greenhouse gases behind China and the USA.

By making it our mission to rescue as much food as we can, as well as work to educate people about the impact of food waste and why growers are forced to over-produce and then waste 30 per cent of their crop, we're directly challenging food waste and businesses operating with damaging environmental consequences.

What are the challenges in creating a business and investment case for this approach?

The fruit and veg market was worth £13bn in 2014, and in 2017 online fruit and veg sales made up around 5.6 per cent. Online sales of fruit and veg are forecast to grow 54 per cent by 2022 and we are perfectly positioned to capitalise on this growing market.

There's also exponential growth in veganism and consumers looking for zero-waste, low plastic options which we already cater to with our produce and minimal packaging (we only have plastic when dealing with surplus that's pre-packaged).

Consumers are now much more aware of the issues of food and plastic waste and they want to make a change.

How do you build public support for rapid disruption of established business models?

Documentaries like Blue Planet and many others have helped a lot in raising awareness of the issue. And the media has been providing reliable information and statistics.

For us, it's about education and building a community and a movement to disrupt traditional ways and models.

We think that when you're offering up a fairly simple solution to a complex problem, it helps.



Emilie Vanpoperinghe is the co-founder of Oddbox, the only fruit and veg delivery service in London that delivers wonky produce destined to otherwise become waste. Earlier this year it smashed its crowdfunding campaign target, raising more than £500,000 to expand its operations across London.

Before co-founding Oddbox in 2016 with Deepak Ravindran, Vanpoperinghe was the director of finance and operations at Girl Effect, a creative non-profit started by the Nike Foundation to empower young girls.



What do you expect your industry to look like in 10 years' time?

We seem to be going back to more local consumption, people wanting to know where their food comes from and how it is grown.

There is a strong push for increased transparency and we hope that the sector will evolve towards a more integrated approach, where growers are treated fairly and consumers have full visibility, understanding and ownership.

This summer's soaring temperatures were a warning sign

How should the business community address the risk that disruption will create stranded assets and job losses?

It is the responsibility of the business community to embrace change and prepare for it.

In a global economy, we cannot resist change, so business leaders need to assess the impact of disruption and help proactively retrain people.

What can policymakers do to accelerate green economic transformation?

Listen and act accordingly and swiftly. Several countries are a lot more advanced in how they address the issues of food and plastic waste, with even small African countries like Rwanda having banned plastic bags for several years now.

I hope our policymakers can learn from other leaders as they now have the backing from people.

Which other sectors do you think are most ripe for green disruption?

The tech, fashion and automotive industry. It is an exciting time and we are honoured to be surrounded by so many amazing innovators.

How do you think the business world is going to change by 2050?

I wish I knew this. Issues like climate change and the attitude from some of the world leaders to deny it are scary. We can only hope that we are able to partly mitigate years of abusing our planet.

I am an optimist and with the rise in veganism and social consciousness, I am hopeful that we can limit the negative impact.

This summer's soaring temperatures were a warning sign and I hope enough people will join us and act.

What are the characteristics that lie at the heart of disruptive business models?

Disruptive businesses question the status quo and embrace uncertainty.

What advice would you give to a green start-up looking to shake up a market today?

Partner with others. Share. Get your community on board. Start small and progress towards a big shiny goal day after day.

Invest in your team. Hire good talent because there is plenty out there and you cannot do it all alone.

What is the secret of your success in disrupting the status quo?

I think we saw an opportunity that made business sense as well as having a strong purpose.

We wanted to make a difference and we started with that.

CHARLIE PATON

SEAWATER GREENHOUSE

What does your organisation do and how is it challenging the industry status quo?

Seawater Greenhouse designs greenhouses that use seawater for cooling, humidification and desalination. These are specifically designed for hot, arid coastal regions. They are 'cool houses', as opposed to the more conventional hothouses.

Why is this disruptive model critical for tackling environmental challenges?

Seawater Greenhouse enables crops, vegetation and trees to grow in places that would otherwise be difficult or impossible, owing to high temperatures and lack of water. It offers the potential to reverse desertification at scale... and feed people.

What are the challenges in creating a business and investment case for this approach?

We are doing it with great difficulty, as the concept is relatively new and at first sight, counter-intuitive. It is also extremely simple. In practice, it is much cheaper to cool and humidify a greenhouse in North Africa or the Middle East than it is to heat and light a glasshouse in the UK – but without horticultural skill and know-how, crop cultivation is still a challenge.

How do you build public support for rapid disruption of established business models?

With even more difficulty. Our results speak for themselves, but they often languish below the horizon. Press coverage from the likes of BusinessGreen, Wired, is helpful in getting the message out.

“If you don't take risks, you will never learn anything new

What do you expect your industry to look like in 10 years' time?

With accelerated impacts of climate change happening more or less everywhere, it is disappointing to see so little practical action. There is no shortage of hand-wringing and greenwash, but little being done.

A very recent exception is Saudi Arabia, which has perhaps the world's most ambitious turnaround plan under new ruler Mohammed bin Salman.



Charlie Paton is the founder and director of Seawater Greenhouse, which provides a low-cost solution to unsustainable farming practices by enabling year-round crop production in some of the world's hottest and driest regions.

Paton's fascination and expertise with light and plant growth led him to develop the Seawater Greenhouse concept. He has received numerous awards for his work in the fields of sustainability and design, among them the recognition as a Royal Designer for the Industry by the Royal Society of Arts.

How should the business community address the risk that disruption will create stranded assets and job losses?

Look ahead, be brave and take on the challenges, in contrast to maintaining 'business as usual'.

What can policymakers do to accelerate green economic transformation?

Unravel the global aid machine that fosters a hand-out culture and inadvertently finances conflict and terrorism. Dismantle the Common Agricultural Policy and replace it with one that focuses on people and the environment. Agriculture and politics do not mix well.

Which other sectors do you think are most ripe for green disruption?

Water tops the list. There is no shortage of it, it's just too salty. More fresh water is needed to solve just about every Sustainable Development Goal from health and wealth to climate change and reversing deforestation.

How do you think the business world is going to change by 2050?

Too slowly to have the impact that is needed. We have an endemically risk adverse climate and if you don't take risks, you will never learn anything new.

What are the characteristics that lie at the heart of disruptive business models?

Critical thinking, questioning, asking "what if?". And then doing it.

What advice would you give to a green start-up looking to shake up a market today?

Focus on what you judge to be the right thing, and don't be put off by failure. If you don't fail, you are not doing anything new.

More fresh water is needed to solve just about every Sustainable Development Goal

RICHARD WALKER

ICELAND

What does your organisation do and how is it challenging the industry status quo?

Iceland is a leader in frozen food retailing with over 900 stores in the UK.

In January 2018, the business committed to becoming the first major retailer in the world to eliminate plastic packaging from all of its own label products by the end of 2023.

In April 2018, it announced that it would remove palm oil as an ingredient from all of its own label foods by the end of the year.

Why is this disruptive model critical for tackling environmental challenges?

Traditional approaches simply take too long, with business and policy roundtables playing to vested interests. There is now an urgent need for change.

I believe that some of the wicked problems now impacting our society can only be solved by cross-sector collaboration between consumers, businesses, campaigners and policymakers.

Within the business sector, this can be achieved by someone breaking the status quo, showing the value of investing time and money in solutions and harnessing consumer interest.

With two per cent of the UK grocery market, Iceland is small enough to move quickly but big enough to create significant public debate and drive realistic business innovation.

What are the challenges in creating a business and investment case for this approach?

It's actually just common sense. Businesses need to wake up to the fact that social and natural capital is not inexhaustible, so long-term sustainability for the business as well as the planet has to be based on doing the right thing.

This is easier within a privately-owned business like Iceland, which gives us the agility and self-determination that are impossible within a publicly quoted company.

“Collaborate, listen and be much bolder, thinking outside of short term political wins.”

How do you build public support for rapid disruption of established business models?

Many consumers are extremely concerned for the future of the planet but feel powerless to act.

We are seeing a seismic shift in consumer concern and action with younger millennials and Generation Z.

They are voting with their wallets for ethical brands and also see themselves as part of a global community, able to share information and take cohesive action.

This is about giving people hope that solutions are in sight, and that they can be part of the change.



Richard Walker is the managing director of Iceland, the UK grocer specialising in frozen foods. Iceland was founded in 1970 by Richard's father, Sir Malcolm Walker.

Walker took over as managing director in August of 2018 and has led the retailer's concerted charge against the use of plastics and palm oil in the grocery sector.

Iceland

What do you expect your industry to look like in 10 years' time?

Growing public awareness and the rise of Generation Z means we will see much more of a focus on the environment and health.

Responsible sourcing will be more important than ever, with technology meaning it will be easier to tell compelling stories about food provenance.

I really hope we will see a huge reduction in food waste from better planning and distribution, and from a shift in consumer behaviour.

I also predict real growth in plant-based foods, with a positive impact on both health and the planet.

This is not just about change for good – it is about survival

How should the business community address the risk that disruption will create stranded assets and job losses?

This is not just about change for good, it is about survival. A failure to change will have economic implications for all of us. The business community has to see itself as part of the system.

If we then think about systems change being the solution, there is an onus on business owners to help think through associated policy, investment and public service change.

What can policymakers do to accelerate green economic transformation?

Policymakers can collaborate, listen and be much bolder, thinking outside of short term political wins.

Which other sectors do you think are most ripe for green disruption?

Looking at systems change, I see a huge opportunity with household waste. Instead of just investing in plastics recycling infrastructure, public money should also be invested in proper food waste collection and the creation of anaerobic digestion and industrial composting plants. This would ensure that Britain's waste is put to use addressing the challenge of chronic soil infertility.

How do you think the business world is going to change by 2050?

My great hope is that we will see the rise of social purpose. In 2018 we are seeing growing evidence that values-driven companies with social purpose are more successful and profitable than their competitors.

I hope we will all be enlightened enough to realise that businesses can grow and make money whilst simultaneously making a positive impact on the world.

What are the characteristics that lie at the heart of disruptive business models?

I think there are three things. There has to be a fit with culture, with positive risk-taking built into the DNA of the business. Strong, focused leadership and ownership at the Board level is critical. Sticking power is what makes it work, as disruptive innovation is not necessarily profitable straight away and it takes away resources from the 'day job'.

It is also higher risk and takes longer than traditional approaches. However, the results can impact the market much more effectively.

What advice would you give to a green start-up looking to shake up a market today?

Understand your market. Quicker and more effective collaborations are built on empathy and shared experience.

Communication is also critical – develop a brand and messaging that are clear, and invest in telling your story.

Communication is also critical – develop a brand and messaging that are clear

What is the secret of your success in disrupting the status quo?

We work to a set of rules:

1. Never underestimate what you can achieve as a business leader if you care enough about an issue.
2. Be curious. Talk to real people about what they think.
3. Be decisive. Stop talking shop and start taking action.
4. Be courageous. Be prepared to disrupt the status quo.
5. Don't be put off by fear of failure. If you have made a strong ethical decision, people inside and outside your organisation will work with you to see it succeed.
6. Listen to and respect other people's views.
7. Be open to collaboration and be prepared to work with unlikely partners.
8. Make it personal – take time from the boardroom to talk to the school assembly.
9. Be prepared for personal criticism. Challenging powerful lobbies means they will bite back.
10. Be clear about the end game. The best leaders set a destination and stick with it, however bumpy the journey may be.

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