

# **BREAKTHROUGH BUSINESS MODELS: EXPONENTIALLY MORE SOCIAL, LEAN, INTEGRATED AND CIRCULAR**

A paper from Volans commissioned by the Business  
and Sustainable Development Commission

September 2016

This paper was produced by external consultants and commissioned by the Business and Sustainable Development Commission. The contents reflect the opinion of its authors and do not necessarily represent the views of the Commission. Readers may reproduce material for their own publications, as long as they are not sold commercially and are given appropriate attribution.

Copyright Business and Sustainable Development Commission.  
This work is licensed under a Creative Commons License Attribution-NonCommercial 4.0 International (cc by-nc 4.0).



**Volans**

2 Bloomsbury Place  
London WC1A 2QA  
United Kingdom

+44 (0)20 7268 0390  
[info@volans.com](mailto:info@volans.com)

[www.volans.com](http://www.volans.com)  
[www.projectbreakthrough.io](http://www.projectbreakthrough.io)



**Business and Sustainable  
Development Commission**

c/o Systemiq  
1 Fore Street  
London ECY 5EJ

[info@businesscommission.org](mailto:info@businesscommission.org)

[www.businesscommission.org](http://www.businesscommission.org)

# Breakthrough Business Models

Exponentially more social, lean, integrated and circular

Contents	
<b>Executive Summary</b>	3
<b>Introduction</b>	6
<b>1.0 Breaking Down</b>	
1.1 Change Goes Exponential	8
1.2 Business Models Evolve	12
<b>2.0 Emergence</b>	
2.1 Breakthrough Exponentials	15
2.2 Social X	18
2.3 Lean X	21
2.4 Integrated X	24
2.5 Circular X	27
<b>3.0 Breaking Through</b>	
3.1 Conclusions & Recommendations	30
<b>Annexes</b>	
1 Glossary of Business Models	32
2 References	34
3 Other Volans Publications	36



---

## Acknowledgements

The main authors of the report were John Elkington, Jacqueline Lim and Lorraine Smith of **Volans**, with thanks to Richard Johnson and Sam Lakha for their invaluable support.

We are particularly grateful to Alex Evans, Jeremy Oppenheim and Melinda George at the **Business and Sustainable Development Commission** for their help and guidance throughout.

We are indebted to our reviewers, who included: David Bent of **Forum for the Future**, Lynelle Cameron of **Autodesk**, Paul Ellingstad of **PTI Advisors**, Amanda Feldman of **Bridges Ventures**, Tony Greenham of **The Royal Society for the Encouragement of Arts, Manufactures and Commerce** (RSA), Geoff Kendall of the **Future-Fit Foundation**, Charmian Love of **Corporate Impact X**, Geoff Lye of **SustainAbility** and **Volans**, Richard Northcote of **Covestro**, Kavita Prakash-Mani of **Grow Asia**, Michael Sadowski of **Nike**, and Susanne Stormer of **Novo Nordisk**. All remaining faults are very much our own.

Thank you, too, to our *Project Breakthrough* partners at the **UN Global Compact** for their commitment and collegiality.

And huge thanks to Rupert Bassett for his wonderful design skills.

---

## Dedication

We dedicate *Breakthrough Business Models* to the memory of Dr Pamela Hartigan, a Volans co-founder among many other things, whose extraordinary life ended on the day the report was completed.

## Executive Summary

“To change something,  
build a new model  
that makes the existing  
model obsolete.”  
R. Buckminster Fuller



Business as Usual

Tomorrow's business leaders understand that truly sustainable development is becoming a mainstream priority for a growing number of markets and, in the process, for an ever-extending list of major companies. They sense that this is no longer “simply” a matter of reputation and trust, but of long-term competitive advantage, security and survival.

Some watch in growing trepidation as market insurgents launch new offerings in the sustainable development opportunity space, with the potential to disrupt incumbent companies and value webs. And the best among them now tell their colleagues and their investors that they must learn to think differently—and act accordingly.

There is still much cherry picking, of course, with self-serving tokenism and, among politicians, much kicking of cans down the road. Meanwhile, too many business leaders still claim to have “embedded” the sustainability agenda, when at best they have taken on board elements of the closely linked Corporate Social Responsibility and Shared Value agendas. All good, as far as they go, but with system change now on the agenda they do not go nearly far enough.

### Business case to business models

One reason for the relatively slow progress is that the first-mover advantage in this field has been consistently overrated—with many companies choosing to shelter behind their sector leaders or adopt a moderately fast follower approach.

Iconic companies like **Interface**, **Natura** or **Novo Nordisk** may now make significant percentages of their premium revenues in this space, but these are still extraordinary companies doing extraordinary things. They have brought unusual levels of imagination, ingenuity, courage and stamina to bear where most companies have only begun to scratch the surface.

But if capitalism is to survive and thrive, today's extraordinary must become tomorrow's ordinary. One key question: How quickly will this happen? Our message in this report: Quicker than most of us imagine. Why? Because the sustainability agenda is beginning to push into the commercial mainstream.

But, even more importantly, an old economic order is now coming apart at the seams, with a new one struggling to be born.

Economic historians know that such periods are very tough on incumbents, whether they be companies, industries or even entire economies.

Whichever sectors they may operate in, all businesses now need a much clearer sense of the direction of market travel—followed by access to the best available people, technologies and above all business models. The old approach of simply signing sustainable business charters or producing annual sustainability reports is a baseline activity, the entry tickets to playing by the new rules. As a result, the spotlight is shifting from the business case for action to the business models needed to deliver against the new market priorities.

### A radical growth agenda

*Breakthrough Business Models*, commissioned by the **Business and Sustainable Development Commission**, concludes that the United Nations' Sustainable Development Goals (SDGs) are a more radical agenda than most business leaders yet realize. They imply a shift from incremental to exponential mindsets and ambitions; from our current focus on the negative impacts of economic activity to the deliberate generation of positive impacts; and from the business case for action to a reconsideration of business models that ensures industries are fit for tomorrow's very different market and geopolitical realities.

Launched early in 2016, the Commission is probing four key areas:

- 1 **The size of the economic prize** that will be within reach if the world achieves the SDGs, as well as the sector-level transformations that will be needed.
- 2 **The new business models** being pioneered by both insurgents and “radical incumbents”, and how these are breaking with tradition.
- 3 **New financial models** that align financial value creation with high environmental and social performance.
- 4 **A new social contract** between business, government and society.

---

## Think Exponential

Our central argument can be summarized as follows:

1

### Think Sustainably

Leaders know that the rules of the game are about to change faster than at any time in their working lives. Simply parroting the latest sustainability jargon won't make the cut—indeed the entire Sustainability Industry must undergo a radical reinvention, involving defragmentation and re-capitalization, if it is to tackle its current weaknesses, including intense siloing, internal competition and a Babel-like confusion of terminologies.

2

### Think Exponential

As leaders learn to Think Sustainably, they will also need to learn to Think X, shorthand for Think Exponential. In the same way they once looked to activists and social entrepreneurs for evidence of where markets were headed, they must now engage a very different set of players. These new players are not happy with 1% or even 10% year-on-year improvements, instead pushing towards 10X—or 10-fold—improvements over time. And in Thinking X, business leaders need to think of four key domains where the X agenda is already playing out.

3

### Think Social

The first imperative is to Think Social. This is not simply about embracing social media and networks, but positioning business for a world pushing from 7 billion to 10 billion people within a few short decades. This builds on the work of social entrepreneurs and intrapreneurs, and impact investors, moving us all into areas like behavioral and cultural change.

4

### Think Lean

The second imperative is to Think Lean. The triple bottom line agenda—now also embraced by the burgeoning global B-Corp movement—expanded the focus from eco-efficiency to new forms of value creation—and destruction. Now there is a need to pull together movements working on lean production, lean start-ups and frugal innovation, and those aiming to create new forms of efficiency across all major capitals (e.g. physical, financial, human, intellectual, social and natural capital).

5

### Think Integrated

The third imperative is to Think Integrated. There is growing interest in Integrated Reporting, with sustainability accounting and disclosures converging with financial accounting and disclosures. But integrated accounting and reporting across multiple forms of capital is only part of the challenge. To break through, we need to evolve solutions that are integrated across—and impact—every level of the system. In tomorrow's capitalism, this will mean seamless data flows from farms, fisheries and factories right out to the biosphere, oceans and atmosphere. The result: new forms of market intelligence that most business leaders do not yet know that they will soon find indispensable.

6

### Think Circular

The fourth imperative is to Think Circular. Going—or thinking—in circles used to be seen as a bad thing, but now concepts like the Circular Economy and Cradle-to-Cradle Design are gaining real traction. This aspect of the Sustainability X agenda runs directly counter to the linear take-make-waste model of capitalism, but the accelerating push towards a low carbon economy—with the new emphasis on carbon productivity—will catalyze closed-loop value webs and business models.

---

## Building the new order

We see emergent examples—though few fully formed—of each of the key characteristics of breakthrough business models outlined above. But the defining element of each case in which we see great promise is the exponential dimension: “The incremental mindset focuses on making something better,” as Mark Bonchek of **Shift Thinking** recently explained on the *Harvard Business Review* website, “while the exponential mindset makes something different. Incremental is satisfied with 10%. Exponential is out for 10X.”<sup>1</sup>

To succeed in the next economic wave, as the new economic order emerges, businesses must let go of the old ways of doing things—keeping the valuable parts and discarding those that harm wider economic, social and environmental systems.

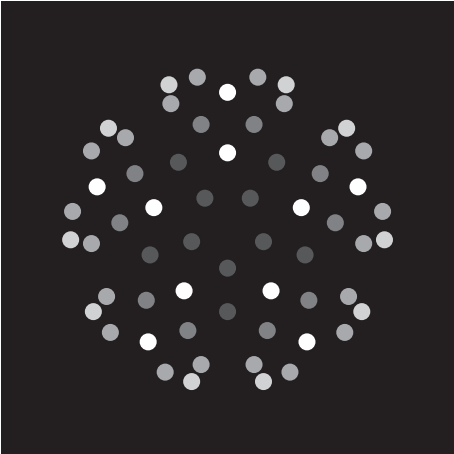
But the leaders spotlighted in the following pages are not simply letting go. They are playing into—and helping build—the new order. And, in the process, they are evolving new forms of value across our four key domains: Social, Lean, Integrated and Circular.

As we head into the year 2017, which marks the thirtieth anniversary of the Brundtland Commission report, *Our Common Future*<sup>2</sup>, we have a timely opportunity to critically reflect on what has worked—and what hasn't.

Achieving exponential progress will require a scale of collective effort rarely seen outside wartime conditions. We call on business leaders—and the wider Sustainability Industry—to embrace this agenda. And we outline four recommendations to this end. Among next steps, we must:

- Spur a mindset shift from incrementalism to increasingly exponential, experimental, breakthrough thinking that understands business as part of wider social and natural systems, accepting that many current business models will become obsolete.
- Create market intelligence and forecasts that track progress against the SDGs and next generation value creation, and build supporting platforms that track the performance of sustainability-oriented business models in real time.
- Continuously review the implications and potential applications of emerging technologies, some of which are flagged in Figure 2 (page 10) and develop them so that, at best, they provide powerful solutions to the needs flagged in the SDGs—or, at worst, they do not undermine the SDG process.
- Reboot the Sustainability Industry so that it, too, uses mindsets and business models that help drive and shape the next wave of breakthrough change.

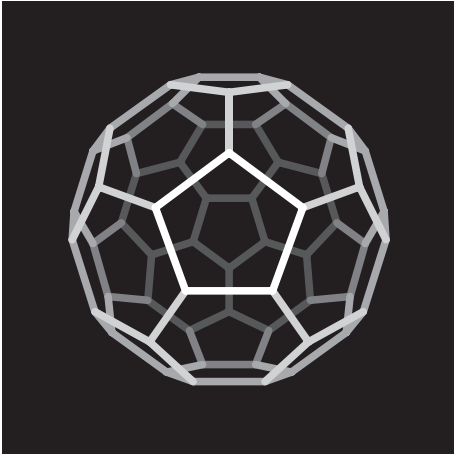
Characteristics of Breakthrough Business Models



Social X

Breakthrough business models will be social, delivering both financial and extra-financial value through positive impacts for people—in the present and in the future.

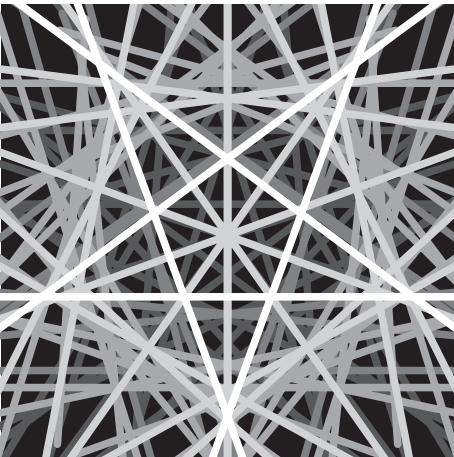
Pages 18–20



Lean X

Breakthrough business models will be lean, optimizing the use of all forms of capital, from physical and financial through human and intellectual to social and natural.

Pages 21–23



Integrated X

Breakthrough business models will be integrated, managing financial and extra-financial value creation across economic, social and environmental systems.

Pages 24–26



Circular X

Breakthrough business models will be circular, sustaining inputs and outputs at their highest value in both technical and biological cycles.

Pages 27–29

Critically, the SDGs, with their 2030 milestone, require a new mindset—an exponential mindset—and, in turn, a retooling or abandonment of many current business models.



## Introduction

The needle is shifting from incremental to exponential change

“The room, full of incumbents from the worlds of auto dealing, parts manufacturing, insurance, and regulation, was stunned into silence. Then they started a slow hand-clap...”

Change or die. Industry after industry now faces this disorientating market ultimatum. In the European Union, leading energy utilities lost over half their value—more than €500 billion—in just a few years as they were squeezed by constraints on coal-fired and nuclear power stations. But an equally important factor was the exponential growth in the availability of renewable energy, necessitating systemic changes in transmission grids.<sup>3</sup>

We see similar dynamics in the automotive industry. At the Los Angeles Auto Show a couple of years ago, **Lyft** president and co-founder John Zimmer delivered an ultimatum to the industry that, perhaps more than any other, shaped the twentieth century. “You can fight [the end of car ownership],” he warned, “and that will probably not turn out well. Or you can acknowledge that this is happening. This is real, serious, and going to change your world.”<sup>4</sup>

The response? The room, full of incumbents from the worlds of auto dealing, parts manufacturing, insurance and regulation, was stunned into silence. Then they started a slow hand-clap, signalling their intense disapproval of what they were being told.

But there were one or two notable exceptions. **GM** president Dan Ammann was one. He promptly pulled Zimmer aside and the two quickly agreed a US\$500 million GM investment in Lyft, valuing the smaller company at US\$5.5 billion. A few months later, Ammann pulled off a similar coup with **Cruise**, a startup building software for autonomous vehicles.

The implications of autonomous vehicles for the future of cities has only just begun to be understood. Quite apart from the safety benefits, huge areas of land could be freed up for other uses, including the sort of green space needed to cool cities in the midst of accelerated global warming.

---

### Living in Exponential times

A new commercial reality is emerging, a new market normal. Most obviously, the drivers include innovative technologies and business models, but the reverses recently experienced by established models of globalization and the mainstreaming of the sustainability agenda also signal other deep currents now in play.

Our analysis suggests that we are heading into a period of growing turbulence, a period of exponential change, disruption and uncertainty. Bad exponential outcomes threaten to take us towards climate chaos, the collapse of ocean ecosystems and what is increasingly known as the “Sixth Extinction.”<sup>5</sup> Good exponential outcomes can close the gap between where we are and where we need to be as the world population accelerates towards 10 billion people.

These changes are powered by emerging macroeconomic trends as much as by novel technologies and business models. Section 1 of this report (**Breaking Down**, pages 8-14) explores key aspects of the economic context within which the UN Sustainable Development Goals (SDGs) will be addressed through into the 2030s.

The very existence of the COP21 climate agreement, and of the SDGs, underscores the growing influence of the sustainable development agenda. Yet the process of convening COP21 and developing the SDGs also spotlighted the highly counter-productive fragmentation and under-capitalization of what we will label the “Sustainability Industry”. This spans multiple sectors of the economy developing solutions for SDG priority areas.

---

### The elephant of sustainable development

In this context, it's tempting to reference that age-old parable from India, of the blind men encountering an elephant. Each one feels a different part of the elephant's anatomy, a tusk, for example, or a leg, tail or trunk. The result is that each asserts his own view of what the object is: a smooth pole, a tree, a brush or a snake.

We see parallel outcomes in the world of sustainable development. The SDGs are perhaps the most striking example to date, representing vastly different elements of society and business, and representing one multi-faceted milestone in what ultimately must be a much longer term and more ambitious agenda.



Enter the exponential mindset, embracing this complexity, and marking a quantum jump in terms of ambition. This worldview accentuates an existing trend, which sees an evolving shift from old business strategies aiming to cut negative impacts and externalities, to new ones designed to boost positive impacts and externalities.

Centrally, it sees the economy as part of the wider web of life. And, because it is open to the intricacies of this wider system, it acknowledges that business cannot do all of this alone. But it stresses that the private sector potentially has unrivalled power, leverage, and flexibility to catalyze and drive the necessary market change. Where others see risk, with the right encouragement and incentives, the private sector can see off-the-scale opportunities.

---

## Four Breakthrough Exponentials

To help business succeed in the new order, mindsets, technologies and business models all need to embrace exponential dynamics. This imperative is now being signalled both by the direction being taken by the disruptive businesses emerging from places like Silicon Valley, and by the level of ambition evidenced in the SDGs and COP21 climate agreement.

Section 2 (**Emergence**, pages 15–29) explores four exponential elements likely to define tomorrow's business models. If we are to have any chance of achieving the SDGs on schedule, business models must be designed from the outset to deliver positive social and environmental outcomes at an increasing scale and accelerating pace. We describe the Four Breakthrough Exponentials, as follows:

### 1 Social X

Tomorrow's business models must deliver financial and extra-financial value by generating positive social impact. In the process, business leaders must ensure they do not undermine other key societal priorities. Most businesses are social to a degree already, in that they employ and serve people. Indeed, this has been a pivotal argument for one-dimensional capitalism apologists, who see financial value creation as enough in and of itself. But for the SDGs to be achieved, businesses must recognize, operate and thrive in a world well beyond their four walls, and this means contributing to a healthier, safer and better-educated populace as a direct result of their business models.

### 2 Lean X

In business, the word "lean" links to several concepts—including the lean start-up movement, lean manufacturing, lean services, frugal innovation and more. Tomorrow's business models must build on this momentum, using resources effectively, creating no waste and maximizing value across entire value networks. They must optimize value creation across all forms of capital, from conventional forms like physical and financial capital, through newly understood forms like human and intellectual capital, to tomorrow's understanding of social, cultural and natural capital. They will need to generate market-relevant value without depleting extra-financial capital.

### 3 Integrated X

Businesses that integrate into their models an understanding of the needs of present and future generations, for multiple capitals and across entire value networks, must become the norm. This entails measuring and managing the financial and extra-financial impacts of a company's value creation processes—aka its business models. This, in turn, will involve re-examining externalities—positive and negative, tangible and intangible—and internalizing them in many cases. Integration, here, means that by succeeding as a business, a company creates restorative value for society and the environment, while seeking to eliminate any activities that undermine our ability to thrive both today and into the future. It also means an active consideration of how system-level operating conditions can be changed for the better.

### 4 Circular X

All businesses must strive to become completely circular, their operations designed to sustain products, components, and material inputs and outputs at their highest utility and value at key points in the cycle.<sup>6</sup> Crucially, the circular economy concept distinguishes between technical and biological cycles. In both domains, the emerging discipline of biomimicry will be increasingly vital, ensuring business neither creates waste, nor undermines essential material and nutrient cycles, or wider ecological and social systems.

---

## 2017 as a milestone year

These are not the only elements of the rapidly evolving sustainable business agenda, but they are likely to be make-or-break. Clearly, there will be real and sometimes painful tensions between these different trajectories. "Lean" achievements may sometimes compromise "Social" targets, for example, while what some see as an "Integrated" solution may not automatically be "Circular". Managing the relevant interactions will be a critical task for leaders, both in business and elsewhere. But, once again, the direction of travel is clear. We are heading into a period that is already attracting labels like the "Great Disruption" and the "Great Convergence". Expect to see multiple elements of the various sectors with potential to deliver against the SDGs priorities, either deciding or being forced to come together in new configurations and constellations.

The implications for the Sustainability Industry are not yet clear, but Section 3 (**Breaking Through**, pages 30–31) focuses on the pivot that the industry must now execute.

As the opportunities spotlighted in the SDGs and elsewhere become clearer, the flow of capital towards this space will build. The pace of mergers and acquisitions will accelerate. And the need to balance sometimes competing financial and extra-financial priorities will not go away. There is a huge opportunity to use the milestone year of 2017 (Brundtland Plus 30) to co-evolve a new vision and clearer market roadmap for the period to 2030 and beyond.

1.0  
Breaking  
Down

1.1  
Change Goes  
Exponential  
Acceleration drives  
breakdown—not just  
breakthroughs

The future promises, or threatens, to take us towards either breakdown or breakthrough. Yet even most board and C-suite members who have bought into the sustainability agenda in general—and the SDGs in particular—are generally far from sold on the idea that exponential change is now inevitable, let alone desirable. But the evidence suggests that this is indeed the case.

Few business leaders will need to be told that we live in unusual times. As their historic archenemy Lenin once put it: “There are decades when nothing happens—and there are weeks when decades happen.” 2016 has seen weeks like that. So why is this happening—and why now?

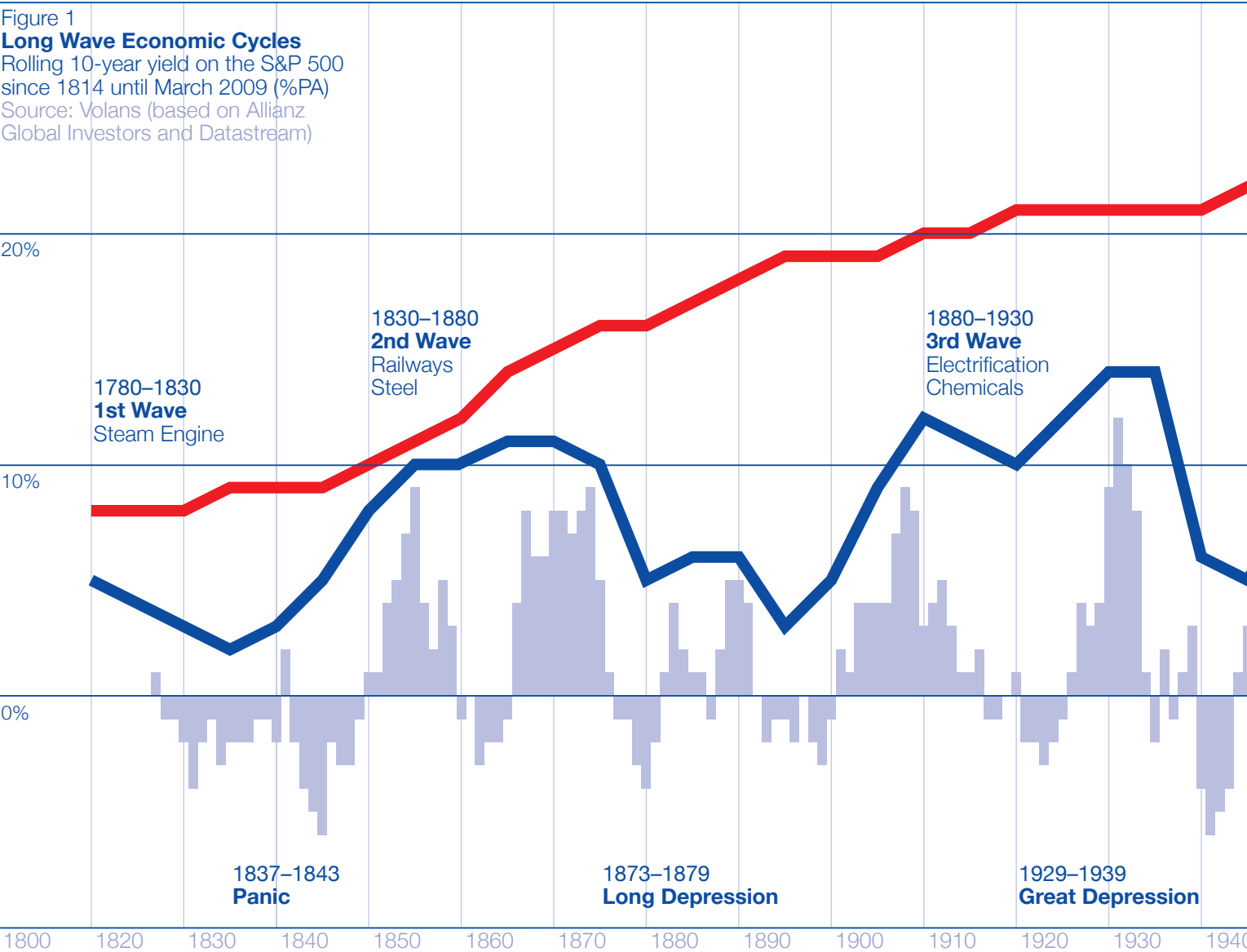
Connecting different dots

Human brains and PowerPoint incline towards straight lines when mapping the future, extrapolating from the present.

But the evidence suggests that the real world behaves differently. Economies have pulses, rhythms and cycles.

But confronted with the same economic data, different people may connect the dots in very different ways. So, for example, two of the last century’s most influential economists, Nikolai Kondratiev and Joseph Schumpeter, saw strong evidence of long wave cycles of investment and divestment in our economies.

They more or less agreed on the frequency, causes and implications of these cycles. Their thinking, whether or not acknowledged, underpins much of today’s analysis of macroeconomic trends. Using their framing and definitions, there have been five long wave cycles since the Industrial Revolution—with a sixth now building, as shown in Figure 1 (below).



By contrast, other analysts see just two waves, with author Kevin Kelly, former executive editor at *Wired*, talking of an era of “Artificial Power”, accelerated by the Industrial Revolution, now giving way to a third wave of “Artificial Intelligence” or “Artificial Mind”. This usefully captures the profound impact that digitalization is now having.

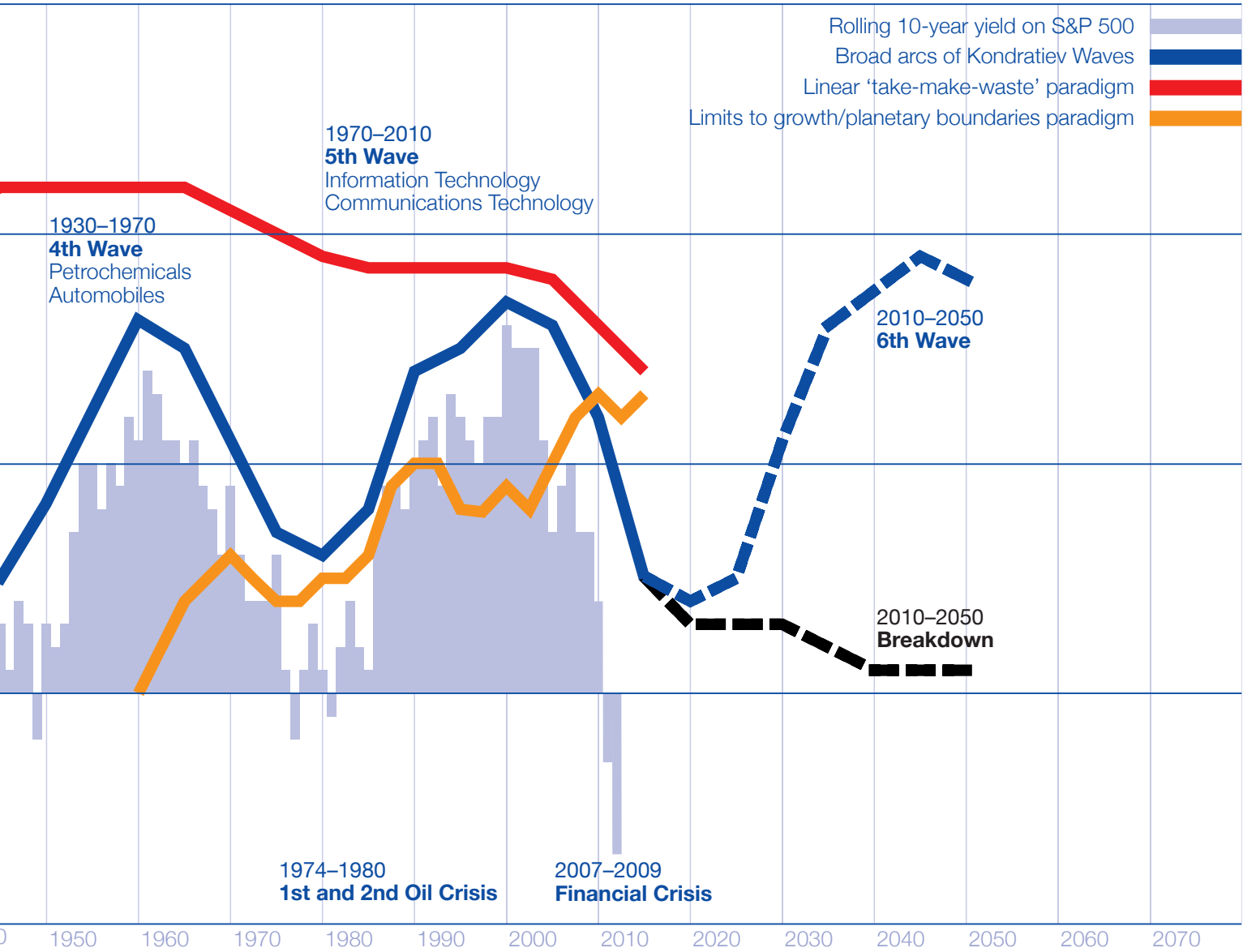
Back in the 1980s, the late futurist Alvin Toffler saw three great waves of innovation: the “Agricultural Age,” the “Industrial Age” and now the “Information Age.” More recently, Klaus Schwab of the **World Economic Forum** talked of three waves to date—with a fourth now building. His 2016 book *The Fourth Industrial Revolution* is short, clear and required reading. His perspective runs as follows:

*We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society. The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.*

**One cycle ends, another begins**

The common thread through all of these analyses is that there are long wave cycles in our economies, and that we now find ourselves at a moment in history where one great wave is fading while another is building.

The dark blue line in Figure 1 (pages 8–9) tracks the latest in a series of five long waves since the Industrial Revolution building on Nikolai Kondratiev’s analysis. It shows Wave 5 transitioning to Wave 6.<sup>7</sup> This shift is a contributory factor, stirring a seething brew—even a breakdown of sorts—of social, economic and political realities. These, in turn, have fuelled the Brexit “Leave” vote, the stunning rise of Donald Trump’s political insurgency in the United States, and growing criticisms around the world of current models of globalization.



Breaking Down  
Change Goes Exponential

There's nothing new under the sun, they say. We have been here before. Some of the technologies that helped drive innovation and growth in earlier economic cycles are shown above each of the wave peaks (in blue text). At the foot of the diagram are some key downwave events, including the "Panic" of the late 1830s and early 1840s, the "Long Depression" of the 1870s, the "Great Depression" of the 1930s, the first and second "Oil Crises" of the 1970s, and the most recent financial crisis, the so-called "Great Recession". The downwaves began when a given set of technologies began to run out of steam.

Paradoxically, in the wake of COP21 and the SDGs, we might now ask whether the Sustainability Industry is also in danger of running out of steam? Stand back, and it is clear that the Sustainability Industry has evolved wholly within Wave 5 realities. Often, too, it has evolved in response to growing concerns about problems caused by Wave 3 and 4 industries, for example, oil, chemicals, automobiles and electrification, and the accompanying resource-extracting mindsets.

Between the onset of Wave 5 and that of Wave 6 (Figure 2, below), the world's human population increased by 3 billion people. The leading edge of technology laid the foundations for Wave 6, but the technologies now emerging will bring very different possibilities—and challenges. As a result, the range of industries being disrupted is expanding rapidly.

One possible way for business leaders to think of this involves viewing the SDGs as a purchase order from 2030 for business and government action today (Panel 1, page 11).

The paradigm is shifting

The notion that scientific paradigms shift was introduced by Thomas Kuhn in his book *The Structure of Scientific Revolutions*, published in 1962. The red line in Figure 1 (pages 8–9), overarching the waves, sketches the rise and impending fall of an economic paradigm that has fuelled and informed all five long wave cycles to date.

At its heart, this paradigm—or worldview—was rooted in the belief that natural resources and environmental sinks for emissions were effectively limitless and free. The consequence: it was assumed that we could take, make and discard with little regard for the wider systemic implications.

The downsides of this paradigm have been increasingly clear, however, from ozone holes and climate change, through to the prediction that by 2050 there could be a greater weight of plastics in the world's oceans than of fish.<sup>9</sup> And these downsides are having significant social implications as well, typically hitting the world's poor hardest.

More hopefully, the orange line in Figure 1 (pages 8–9) tracks a paradigm that has been evolving since around 1960. This acknowledges planetary boundaries and real limits to some forms of economic growth.<sup>9</sup> It also tracks—more or less directly—the appearance of the Sustainability Industry, which for decades has been trying to encourage business to embrace a new worldview.

Figure 2  
Characteristics of Waves 5 and 6  
Source: Volans

	Wave 5	Wave 6
Period	1980-2015	2016-2050
Global population	1980 4.4 billion	2015 7.35 billion
Social tensions	1% vs. 99%	Young vs. old
Defining technologies	Information & communication technologies (ICT), particularly internet, search engines, GPS and mobile phones, digitalization, social media, genetic engineering	Drones, artificial intelligence (AI), big data, virtual reality, internet of things (IoT), robotics, autonomous vehicles, nanotechnology, low carbon technology, solar energy, smart grids, synthetic biology, geoengineering, blockchain
Star entrepreneurs	Berners-Lee, Bezos, Gates, Jobs, Ma, Page & Brin, Yunus	Diamandis, Musk, Polman—and thousands of people we haven't yet heard of
Disrupted sectors	ICT, media, retail, finance, early impacts on energy	Wave 5 sectors, plus automobility, food, health, education, security
Impact	Measuring/reducing negative impacts	Identifying/delivering on unmet needs
Big ideas	Limits, Sustainability	Abundance, Anthropocene, Resilience
Sustainability focus	Avoiding Breakdown	Achieving Systemic Breakthroughs

**Breaking Down**

## Change Goes Exponential

Civil society movements often struggle to gain traction, but sometimes they, too, go exponential. “Consider these numbers,” Michael Northrop (Director of the Sustainable Development Program at **Rockefeller Brothers Fund**, a leader in fossil fuel divestment) emailed us, “In September 2014, managed investment committed to divesting from fossil fuels was US\$52 billion. Exactly two years later, the figure is expected to be US\$5 trillion.”

Paradigm shifts don’t come easy, however. Things can go backwards as well as forwards. As an example, recent political turmoil in Europe and North America has been read by senior figures in China as evidence that the whole globalization project itself may now be under threat. Huang Yiping, a member of the country’s central bank monetary policy committee, noted that Brexit could mark a “reversal of globalization.”<sup>10</sup>

You could also see the Brexit vote as a visceral, knee-jerk rejection of the complexity, unpredictability, diversity, blurring and integration that the impending global transformation for sustainability now requires.

Many Brexit voters (typically older and more conservative) were looking for simplicity, predictability, control, safety and order—precisely the things that a major paradigm shift blows apart.

It is an uncomfortable truth that Wave 6 will disrupt and render obsolete much of the politics and many of the business models established in earlier waves. The timing of the crossover point between the old and new paradigms is a matter of conjecture, though the transformation is likely to be well under way by 2030. One thing is clear: our earlier obsession with demonstrating the business case for action is about to shift irretrievably to a new focus on business models—and breakthrough business models in particular.

The downsides of this paradigm have been increasingly clear, however, from ozone holes and climate change, through to the prediction that by 2050 there could be a greater weight of plastics in the world’s oceans than of fish.

---

**Panel 1**  
**2030 calling**

Imagine this. Your cell phone rings. The apparent source of the call initially has you on the point of hanging up. It sounds like a hoax. The caller says they are from the world of 2030 and offers to give you the ultimate insider intelligence on tomorrow’s markets. If you can just resist the urge to hang up, you might benefit from profound insights into the future of value (and wealth) creation.

Short of our receiving that call, or finding the equivalent of Dr Who’s time machine or the modified DeLorean in *Back to the Future*, the SDGs are probably our best guide to what the world of 2030 needs us to invest in and vote for today. The 17 Goals and 169 targets can be seen as a purchase order from the future, specifying a range of social, environmental governance and economic needs likely to shape and drive the global economy in the coming decades.

So how would today’s business leaders respond to this very explicit purchase order from the future? What products and services would they be instructed to expedite—and which sectors would be warned to throttle back on or be abandoned entirely?

Among other things, the world of 2030 would likely urge a new social contract between business and society. It would flag and celebrate socially oriented leadership in today’s world.

Consider what happened when the *Harvard Business Review* revamped the analytics used to pick 2015’s CEO of the Year.<sup>11</sup> Fully 20 percent of the scoring shifted to environmental, social and governance (ESG) factors. As a result, Amazon’s Jeff Bezos fell from No.1 position to 87th position, while **Novo Nordisk**’s Lars Rebien Sørensen leapt into pole position (page 18–19).

As the benchmarks change, further seismic shocks will reshape the landscape of leadership, with those topping such rankings viewing the world of 2030 and beyond—aka the future we want—as a key stakeholder, even a potential customer. If the call comes in, take it. Short of that, imagine what the future might want to buy, invest in or vote for in today’s world to meet tomorrow’s needs.



## 1.2 Business Models Evolve And not just in business

There is a growing shift in focus away from the business case and towards the role of business models in delivering multiple forms of value.

“Our business model’s toast!” That’s how a senior executive from a major power utility described to us the challenge now facing his company and its sector. But he quickly went on to say that **Enel** is acutely aware that it faces profound structural problems, and is working hard to transform its business model. In the process, the company is using the SDGs to frame its corporate strategy and re-engineer the way it makes money.

The Sustainability Industry has been working on the business case for change since before the dawn of the twenty-first century. Much of that work took the business model for granted, whereas the questions asked revolved around which risks or opportunities might be financially material over a meaningful timescale.

Today there is an accelerating shift in leading companies—from business case modeling to the role of business models themselves in delivering new forms of value. Get the business model right, they are concluding, and the business case more or less falls into place.

---

### No silver bullets

Many business leaders have been delighted by the open recognition in the framing of the SDGs that business has a critical role to play in their delivery. They see this as an historic step forward. Many also understand that these Global Goals require a switch in focus from corporate social responsibility and even shared value approaches, to system change strategies based on stretched ambitions, new technologies, new business models, and active market shaping.

But growing numbers are signalling that business cannot do this on its own. As **Royal DSM** CEO Feike Sijbesma has explained, “No-one can solve today’s challenges alone. There are no silver bullets.”<sup>12</sup> Meanwhile, some analysts poring over 2016’s geopolitical and economic runes warn of a possible disintegration of the entire post-WWII order. This seems alarmist, though recent trends suggest that the most ardent champions of both globalization and technology are at risk of becoming their own worst enemies.

Whatever your viewpoint of technology or globalization, it is hard to shrug off the growing sense that an old economic order is now coming apart, often faster than the new one is taking shape. Against this backdrop, truly sustainable development on the scale suggested by the SDGs, and in the defined timescales, looks distinctly less likely.

But, as we argued in our 2009 report *The Phoenix Economy*, times of profound change can open up unparalleled opportunities for those who have a clear idea of where they are headed. That’s our core assumption in what follows.<sup>13</sup>

---

### Business is make-or-break

At a time when governments are struggling to keep up with events, the role of business—specifically larger companies—will be even more important. Here’s how Harvard professors Robert Eccles and George Serafeim explain the power of larger businesses in today’s world:

*Globalization has concentrated economic power within a group of large companies who are now able to change the world at a scale historically reserved for nations. Just 1,000 businesses are responsible for half of the total market value of the world’s more than 60,000 publicly traded companies. They virtually control the global economy. [...] By 2010 the world’s largest 1,000 companies made US\$32 trillion in revenue. They employed 67 million people directly, and had a total market cap of US\$28 trillion. That’s equal to 49 percent of total world market cap.*

They note that the largest 1,000 companies and their supply chains have huge impacts, both for good and ill:

*They create goods and services for customers, wealth for their shareholders, and jobs for millions of people. They also consume vast amounts of natural resources, pollute the local and global environments at little or no cost, and in some cases limit employees’ well-being if wages and working conditions are inadequate. These latter, undesirable practices make our business-as-usual society unsustainable.<sup>14</sup>*

A growing number of top executives have begun to question whether issues like human rights, access to medicine, water security or climate change might not be legitimate strategic concerns—and, in some cases, huge market opportunities. The Shared Value movement plays energetically into such areas, building out from earlier work on the business case for change.

**Breaking Down**

## Business Models Evolve

As the financial materiality of a widening range of issues has been demonstrated, as in the cases of **BP**, **VW** or those impacted by the Panama Papers, there has been growing interest in business models that might address the relevant challenges and opportunities. In Japan, for example, convenience retailer

**7-Eleven** woke up to the fact that the aging of its customer base in the country where it has the most stores would be a significant issue, both for its own business and for the nation. It launched a member-based meal delivery service that has taken off across most of its franchises (Panel 2, page 14).

For those wanting to rethink their business models, there is a wealth of manuals. Among the most comprehensive is *The Economist Guide to Business Modelling*.<sup>15</sup> We also provide a compiled list of some 80 business models from various sources in Annex 1 (pages 32–33) – a number of these models are beginning to take shape in some of the examples that are beginning to deliver on the SDGs. Our aim here is not to design tomorrow's business models. Instead, it is to forecast the likely direction of travel informing tomorrow's business model innovation.

**Is your business model at risk?**

How to tell if your business model is at risk? One set of clues comes from Salim Ismail and his team in their insightful book, *Exponential Organizations*. Based on their analysis, if your business—and business model—has any of the following characteristics, it's time to worry:

- Top-down and hierarchical in its organization.
- Driven by financial outcomes.
- Linear, sequential thinking.
- Innovation primarily from within.
- Strategic planning largely an extrapolation from the past.
- Risk intolerance.
- Process inflexibility.
- Large number of employees.
- Controls own assets.
- Strongly invested in the status quo.

For guidance on how to build tomorrow's business models and businesses, try flipping all of these characteristics on their heads. Before we go further, however, we should ask the basic question: what is a business model?

In the simplest terms, it's how an enterprise makes money. But we prefer a more holistic view—that business models describe how organizations viably create and capture value—as suggested by **The Business Model Innovation Factory**.

To our considerable surprise, as we talked to business people around the world, we discovered that many struggled to succinctly describe the business models used by their own companies, supply chains and industries. And those who did manage to do so used very different terms. Things are complicated further by the fact that there are so many business models now in play, as indicated in Annex 1 (pages 32–33).

**Business models—not just for business**

It is likely that most elements of the business models that will dominate Wave 6 are already visible somewhere in the world, like early mammals scurrying around the feet of soon-to-be-extinct market dinosaurs. Meanwhile, it is important to remember that business models aren't just for business.

So says The Business Model Innovation Factory's founder, Saul Kaplan. He notes that, “business model innovation is on the critical path to transforming important social systems including education, health care, and government.”<sup>16</sup>

The core idea here is that any organization that wants to be relevant, and deliver value at scale, must clearly articulate and evolve its business model. Kaplan comments, “It's amazing how few organizations can clearly articulate their business model. Can yours? If you ask any ten people in your organization how it creates, delivers, and captures value, will the answers even be close?” And we would add, crucially, would the answers suggest your business delivers value in a way that potentially answers 2030's call?

It's an uncomfortable fact that business models don't last as long as they once did. In earlier times, business models seldom changed over generations, with most people playing the game by well-defined market rules. But today very different players are emerging, enabled by disruptive technology, and refusing to play by the old rules. As a result, business model innovation is becoming the new strategic imperative.

In the process, traditional barriers are breaking down—between sectors, disciplines and agendas. As Kaplan sums up the trend, “We already see for-profit social enterprises, non-profits with for-profit divisions, and for-profit companies with social missions. Traditional sector lines are blurring.”

In this report, we spotlight this blurring with examples such as Pakistan's **DoctHERs**, delivering radically more affordable—yet still for-profit—healthcare for and by women (page 23), or the industry-blending efforts of energy companies **Enel** and **National Grid**, partnering with car company **Nissan** to profitably link companies and electric car drivers into the power grid (page 17). Our new online platform, Project Breakthrough, continues to feature other examples.<sup>17</sup>

Stand back and it is clear that business models, at all scales of enterprise, will be make-or-break for the SDGs. Take a look at Panel 2 (page 14) where we suggest a simple tool for organizations to assess their business models. We often focus our attention on large businesses because of their scale and potential impact, but we also recognize that small insurgents and disruptors have critical roles to play. Indeed, many are likely to have a bigger impact on how Wave 6 takes shape.

**So how will we think of business models tomorrow?**

As Wave 5 fades and Wave 6 builds, there will be an accelerating tempo of booms and busts. 2016 saw one potential bust in California, where the quest for “unicorns”—start-up companies reaching a US\$1 billion valuation—went onto the back foot. Investors began shifting their focus from companies able to deliver fast growth at any cost to those with viable, “sustainable” business models.

Take the case of **Zirx**, a San Francisco start-up that managed to raise US\$36 million with a business plan that relied on parking people's cars for them and making money on the side by selling petrol and washing cars. By early 2016, Zirx was experiencing a profound shift in investor sentiment.<sup>18</sup> “We had a model,” CEO Sean Behr said, but admitted: “It just wasn't realistic.”



Looking at the bigger picture, it is clear that we face several decades of experimentation, at all levels of our economies. A clear signal that we are making progress will be when the rate of failure (both of incumbents and insurgents) goes off the scale. The mindsets, strategies, and business models evolved in Waves 3 through 5 will face an increasingly fierce natural selection gradient.

For those hoping for miracles, it is clear that there is no ‘secret sauce’ business model waiting in the wings to deliver sustainability development. Instead, we must buckle down to the slower, harder task of better understanding how business models evolve, operate and can be shaped. There is now a huge number of business model options to pick from, but we need better informed ways of doing so.

The impact of digitalization

The characteristics spotlighted in Section 2 (**Emergence**, pages 15–29) will be decisive in terms of which business models are able to deliver long-term value—and which are not. All of them will be powerfully shaped by digitalization, which has already helped launch an A-to-Z of new business models, from **Airbnb** to **Zipcar**.<sup>19</sup>

The next five chapters explore key characteristics of tomorrow’s breakthrough business models. First and foremost, they will be Exponential in terms of their capacity to scale both their operations and their positive impacts. As the penetration of new IT technologies, networks and platforms spreads, this exponential factor can only grow.

Increasingly, successful business models will exhibit four types of exponential potential, to a greater or lesser degree. Crucially, these will include: social contributions, direct and indirect (pages 18–20); effective (or “lean”) use of all forms of capital (pages 21–23); levels of integration, from fields, farms, fisheries and factories through companies, industries and economies, right out to the atmosphere and biosphere (pages 24–26); and contribution to shaping tomorrow’s increasingly closed-loop and circular value networks (pages 27–29).

Panel 2  
The Business Model pit-stop

Like Formula 1 racing cars that barely pause for important fixes, fast-paced businesses insist they have little time to spare for the kind of tune-up required to work through the 17 SDGs, let alone the 169 targets. Some businesses, however, are describing to what degree they are already aligned with some, many or all of the Goals. In some cases this is for PR purposes, in others the process is undertaken in a genuine spirit of gap analysis.

This is critical, not simply as a tick-box exercise looking across the SDGs, but as a measure of how businesses and their value creation models are stretching their remits and looking beyond the obvious sectors they currently impact, to where there is opportunity to create value for multiple stakeholders across wider systems.

As part of our research, we evolved a simple “heatmap” looking at the activities of businesses and initiatives innovating in relevant areas, to quickly gauge the extent to which a business model positively impacts upon four broad nexuses, as well as the business model characteristics we see as critical to breakthrough trajectories (i.e. Exponential, Social, Lean, Integrated, and Circular). This approach was used across scores of businesses to identify suitable case examples.

One intriguing example is shown below, for **7-Eleven** in Japan (where the company has more stores than anywhere else in the world). It has developed a healthy food delivery subsidiary, 7-Meal Service, in response to the growing number of elderly and disadvantaged groups unable to travel or easily access daily goods. At the same time, the company has also begun to see its chain of over 18,000 franchise convenience stores across Japan as part of the country’s social infrastructure.

This has translated into stores serving as a “lifeline” in disaster-affected areas, as well as entering partnerships with local authorities to offer community visits to seniors in the area.<sup>20</sup>

This analysis suggests that the current model’s strengths are in its social and integrated nature, which are delivering against the “Habitat” and “Wellbeing” nexuses relatively well. On the other hand, there is still a gap to close in the degree to which the model embraces “Lean” and “Circular” elements that will be required of companies to fully deliver on the SDGs and beyond.

As we signal in our Conclusions, this kind of analysis urgently needs what software engineers call a “mash-up”. We need to converge work on the SDGs and linked targets, on emergent assessment methodologies like the **Future-Fit Business Benchmark**,<sup>21</sup> and on the sorts of market exponentials covered in Chapters 2.1–2.5 (pages 15–29).

Heatmap of Breakthrough Potential  
7-Eleven

	Diets	Resources	Habitats	Wellbeing
High impact	Social	Social	Social	Social
Medium impact	Lean	Lean	Lean	Lean
Low impact	Integrated	Integrated	Integrated	Integrated
	Circular	Circular	Circular	Circular

## 2.0 Emergence

### 2.1 Breakthrough Exponentials From 10% to 10X

Breakthrough business models will be increasingly **exponential**—in at least four dimensions: Social, Lean, Integrated and Circular.



Too often the Sustainability Industry has met business where it is, choosing—or being forced—to adopt Business-as-Usual and Change-as-Usual approaches, rather than pushing towards breakthrough outcomes and ultimate system change. So what can be done to expose business top teams to what's coming and help them adapt accordingly?

One way is to bring in different parts of the outside world. Just as business was once encouraged to engage and learn from activist NGOs, and then social entrepreneurs and impact investors, there is now a growing push to expose people from boardrooms and C-suites to the perspectives and activities of new types of exponential innovators, entrepreneurs and investors.

Groups like **Leaders' Quest** take leaders from incumbent companies, for example major European automakers, to California to meet insurgents like **Uber**. Or they take them into the slums of megacities, to see the very different circumstances in which different forms of breakthrough innovation are needed and can happen.

Sometimes bringing together these different realities can result in a shower of sparks. Increasingly, incumbents and insurgents alike are recognizing good reasons to partner with new and different collaborators. In some cases, this may lead to an incumbent investing in or acquiring an insurgent, but at a time when some insurgents have market valuations ahead of the incumbents they aim to disrupt, the outcome could equally turn out to be a David acquiring a fading Goliath.

Whichever way the game goes, it is clear that tomorrow's business models must generate new blends of social impact, becoming ever-leaner in their use of multiple forms of capital, integrating across every level of the global economy and biosphere, and helping push towards a circular economy.

Delivering the SDGs will require many parts of the business world to shift onto new market pathways directed towards exponential improvements over time. This, in turn, will require new ways of thinking, new mindsets. "The incremental mindset focuses on making something better," as Mark Bonchek of **Shift Thinking** recently explained on the *Harvard Business Review* website, "while the exponential mindset makes something different. Incremental is satisfied with 10%. Exponential is out for 10X."<sup>22</sup>

#### Bending the line

While developing this section, we helped a Japanese car company test and evolve the latest round of its sustainability strategy. A striking feature of their strategy slide deck: all the lines in the graphs were straight, in some cases charting data out into the 2050s. Our response: little in history goes in straight lines—and the future is likely to bend the relevant trajectories in unexpected directions.

Linear thinking, in short, is time-expired. It's time to bend the lines. Sensing this, growing numbers of business leaders are jetting across to Silicon Valley to fill up their ambition tanks, even if they know that incumbents rarely become effective insurgents. Still, many hope that some of that exponential energy will rub off on them.

One literally stellar set of market insurgents can be found in the renewable energy sector. Here's how **Bloomberg** puts it:

*Clean energy investment broke new records in 2015 and is now seeing twice as much global funding as fossil fuels. One reason is that renewable energy is becoming ever cheaper to produce. Recent solar and wind auctions in Mexico and Morocco ended with winning bids from companies that promised to produce electricity at the cheapest rate, from any source, anywhere in the world [...]. Government subsidies have helped wind and solar get a foothold in global power markets, but economies of scale are the true driver of falling prices. The cost of solar power has fallen to 1/150th of its level in the 1970s, while the total amount of installed solar has soared 115,000-fold. The reason solar-power generation will increasingly dominate: it's a technology, not a fuel.*<sup>23</sup>

**Emergence****Breakthrough Exponentials**

In pursuit of exponential futures, we visited **The X Prize Foundation** and **Singularity University** in California. Here's how the X Prize team introduces their challenge prize approach:

*XPRIZE is an innovation engine. A facilitator of exponential change. A catalyst for the benefit of humanity. We believe in the power of competition. That it's part of our DNA. Of humanity itself. That tapping into that indomitable spirit of competition brings about breakthroughs and solutions that once seemed unimaginable. Impossible.*

*We believe that you get what you incentivize. And that without a target, you will miss it every time. Rather than throw money at a problem, we incentivize the solution and challenge the world to solve it. We believe that challenges must be audacious, but achievable, tied to objective, measurable goals. And understandable by all.*

*We believe that solutions can come from anyone, anywhere, and that some of the greatest minds of our time remain untapped, ready to be engaged by a world that is in desperate need of help.*

Co-founder Peter Diamandis challenges linear thinking as destructive, self-limiting. "Unfortunately, most people think in terms of scarcity, and linear growth. They see limitations, rather than possibilities. They forget that the world's biggest problems are the world's biggest business opportunities. They see linear projections in a world where technology is exploding exponentially."<sup>24</sup>

In other words exponential change can disrupt even exponential businesses. As Diamandis put it in the foreword to the book *Exponential Organizations*, "Today the only constant is change, and the rate of change is increasing."

---

**The future's already here:  
Breakthrough Exponentials**

"You never change things by fighting the existing reality," the fabled designer and engineer, Buckminster Fuller, once said. "To change something, build a new model that makes the existing model obsolete."

Around the world, innovators are now doing just that, though tracking them down can be a challenge. Often, radical new solutions start out on the edges of the system, struggling to gain traction. The rate of attrition and failure tends to be high, with technologies and business models running through many generations and variants as their originators struggle to break through.

But as an old wave fades and a new one builds, the threat to incumbent businesses becomes increasingly clear. As a result, a growing number of business leaders are viewing the impact of companies like **Uber** on the taxi industry, and **Airbnb** on the hotel industry, as a warning that no sector can consider itself safe against the new types of market insurgent.

---

**Plugging into the exponential mindset**

Old order businesses tend to have a number of characteristics that make them increasingly vulnerable. As entrepreneur and tech investor David Rose put it: "Any company designed for success in the 20th century is doomed to failure in the 21st." Applying an exponential mindset will be key. To get a sense of how this is best done, consider plugging into **Singularity University**. Here's how they introduce themselves:

*Singularity University is a benefit corporation that provides educational programs, innovative partnerships and a startup accelerator to help individuals, businesses, institutions, investors, NGOs and governments understand cutting-edge technologies, and how to utilize these technologies to positively impact billions of people.*

Singularity University believes that "leveraging the convergence of exponential technologies will set us on the path to solve our Global Grand Challenges and shift from an era of scarcity to abundance." There are 11 global grand challenges—and they map fairly well across the SDGs, though one outlier is Space.

It is no accident that Peter Diamandis was a co-founder of both **The X Prize Foundation** and Singularity University, nor that he wrote both the foreword and afterword for *Exponential Organizations*, by his colleagues Salim Ismail, Michael Malone and Yuri van Geest. The book's 12-point framework offers crucial input for any business wanting to turn one or more SDGs into profitable market opportunities.

**Achieving adoption, at scale**

The inherent potential for technology to drive exponential change is clear. The book *Exponential Organizations* spotlights a range of potent forces now at work, among them exponential technologies (including artificial intelligence, sensors, networks, robotics, additive manufacturing, nanomaterials and synthetic biology), DIY innovators, crowdfunding, crowdsourcing and the rising billion entrepreneurs enabled by the latest generation of Internet-delivered technologies.

But technology and digitalization alone are not enough to guarantee mainstream adoption. A core discipline for the new breed of innovators involves building platforms, rather than just products. The aim, according to *Exponential Organizations*, is:

- 1 To identify a pain point experienced by a large number of potential consumers or users.
- 2 To develop a core value unit in any social interaction between a producer and consumer.
- 3 Design a way of facilitating that interaction, developing a prototype to test the proposition.
- 4 Determine how to build a network around that interaction—turning users into ambassadors for the platform.

Business models are key to exponential growth—as demonstrated by **Google**, now part of **Alphabet**—whether these potentially lead to more sustainable outcomes or not. Relevant business models include **Franchising**, **Freemium**, **From Push to Pull**, **Multi-sided Platforms** and **Open Source**—in addition to many of those spotlighted under our other headings in Chapters 2.2–2.5 (pages 18–29).

Note: all such terms highlighted in **bold italic** link back to Annex 1 (pages 32–33), which lists around 80 different business models.

We now spotlight two contrasting examples, looking at different ways in which an insurgent (**Tesla**) and a group of incumbents (**Nissan**, **Enel** and **National Grid**) are playing into the exponential space.

Emergence  
Breakthrough Exponentials

Case 1  
Thinking big—  
and betting big

Tesla

Country USA	Musk is an entrepreneur who thinks big—and bets big. His investment in the company's Gigafactory in Nevada is a case in point. <sup>25</sup> Tesla's mission, he says, is to accelerate the world's transition to sustainable energy. To achieve that goal, he knows that Tesla must produce electric vehicles in sufficient volume to force structural change in the automobile industry.
Status For-profit	
Founded 2003	
Website www.teslamotors.com	
Purpose	Tesla's mission is to accelerate the world's transition to sustainable energy. It aims to produce electric cars that deliver incredible power and uncompromising design, with the goal of making each new generation increasingly affordable.
Business model	One potential road block: with a planned production rate of 500,000 cars a year in the latter half of this decade, Tesla alone will require today's entire worldwide production of lithium ion batteries. So the Gigafactory is a creature of necessity.
	In a twist on <b>Crowdfunding</b> , Musk morphed the standard practice in the auto sector of taking "good faith" deposits from customers wanting to get the latest models as soon as they come off the assembly line. <sup>26</sup> What Tesla did for their Model 3 launch was unprecedented. By the launch, it had already secured over US\$325 million in customer deposits for the Model 3, even though customers knew it would not ship until late 2017. Unlike <b>Kickstarter</b> pledges, however, the US\$1,000 deposit that more than 325,000 would-be Tesla drivers put down is refundable.
Founder and CEO, Elon Musk, operates all over the map, it often seems: in electric cars, batteries, solar power, and space. But the picture has got a little simpler now that Musk has engineered the acquisition of his solar energy company <b>SolarCity</b> by his electric car company Tesla. The key is that Musk can see big picture trends extending well into Wave 6. In some cases, as with his interest in the settlement of Mars, he may even be playing into Wave 7 and beyond.	

Case 2  
Stretch partnerships deliver  
exponential outcomes

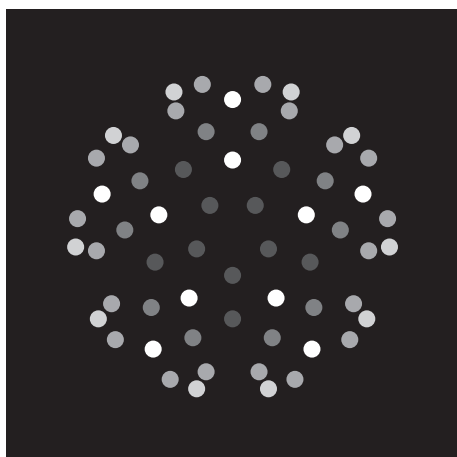
Nissan + Enel + National Grid

Countries Japan, Italy, UK respectively	While countries like China and Germany offer subsidies to buy battery-powered cars, consumer anxiety over their limited range and higher prices has slowed adoption. Now Nissan and Enel are providing Enel's "vehicle-to-grid" software to drivers, allowing them to trade electricity via the National Grid system.
Status For-profit multinationals	
Founded 1933, 1962, 1990 respectively	
Websites www.nissan-global.com www.enel.com www.nationalgrid.com	
Purpose	If it works, the aim is to roll out the scheme commercially, explains Ernesto Ciorra, Enel's head of innovation and sustainability. Dubbed "xStorage", the energy storage unit developed by Nissan and <b>Eaton Corp.</b> , a Cleveland-based company, will be priced starting at €4,000 (US\$4,556).
	But for this to happen, and at the right scale and speed, government action is needed. Nissan and Enel want regulators to help encourage the shift away from diesel- and gas-driven cars. They argue that there should be higher taxes on vehicles emitting higher levels of carbon dioxide. Once governments adopt regulations to cut pollution from the transport sector, a quarter of the world's cars could be electric by 2040, according to <b>Bloomberg New Energy Finance</b> forecasts. <sup>27</sup>
Business model	In a bid to mainstream electric vehicle adoption, and at the same time, increase the viability of renewable energy – a partnership was devised that could potentially help boost Nissan's electric car sales, whilst helping the UK's National Grid smooth out fluctuations in the renewable energy system.
	To this end, Nissan and National Grid formed a new partnership with Enel, uniting Japan's second-biggest carmaker with two of Europe's biggest utilities. Together they aim to enable drivers of Nissan Leaf battery-powered cars and e-NV200 electric vans to sell excess energy during periods of peak demand—turning automobiles into mobile power sources competing with the likes of Tesla's Powerwall battery.



## 2.2 Social X 2030 demands solutions for a world of 8.5-going-on-10-billion

Breakthrough business models will be **social**, delivering both financial and extra-financial value through positive impacts for people—in the present and in the future.



Tomorrow's business models must pursue positive social impact to drive real progress against the SDGs. True, most businesses are social, in that they employ and serve people. But leading businesses are now moving well beyond this basic, existential position and adapting their business models to better align with their evolving sense of social purpose.

Most business leaders accept that there will be a continuing need for regulators, enforcement agencies, activists and the media to bear down on the most anti-social business activities. And the push for greater transparency and accountability through supply chains can only grow. Tools like social impact assessments and audits have long been used to work out the balance between the upsides and downsides of business activities, and should now be applied more widely.

But our focus here is on the design and operation of business models, and delivering on the SDGs requires considerably more than risk mitigation and socially-oriented programs and initiatives.

Unhelpfully, the terminology remains opaque and confusing. You know you're in a relevant conversation when you hear terms like social capital, social return on investment (or SROI), social impact, social enterprise, social entrepreneurs and intrapreneurs, social innovation, double bottom line, shared value, base of the pyramid, and impact investment. For many people, but not all, the social agenda also embraces ethical, environmental and governance considerations.

Luckily, there are those who are already out there, driving real-world change—and most are happy to talk about how this is best done. Since the late 1990s, we have seen growing interest in a new breed (or newly celebrated breed) of social change agents, embracing social entrepreneurs (who run their own organizations and businesses) and social intrapreneurs (driving change within mainstream organizations). Impact investors are also bringing new professionalism and financial rigor to the field.

Learning from how these people define and deliver social value is now a key step for business leaders. **Danone's** relationship with the **Grameen Bank** in Bangladesh was an early example of a major company using a strategic partnership with a social enterprise—coupled with a novel business model—to explore new opportunity spaces towards the base of the wealth pyramid.

Meanwhile, a growing number of businesses are embracing B Corporation status, or—like **Unilever** with its much-celebrated Sustainable Living Plan—are exploring ways to certify at least some of their subsidiaries. This involves rechartering a business around the triple bottom line, something **Novo Nordisk** pioneered back in 2000.

Leading businesses use materiality analysis to identify priority threats and opportunities, coupled with social impact evaluation—for example, quantifying social return on investment (SROI). But, to truly move the needle on the SDGs, business leaders must embrace shared value in its fullest sense, embedding it into their next generation business models and helping drive the necessary system-level changes.

---

### The future's already here: Social X

*Welcome to the New Math, Mr Bezos.* That was the title of a provocative article by editor-in-chief Adi Ignatius on why the *Harvard Business Review* (HBR) changed how it compiles its annual calculation of the world's 100 best-performing CEOs.<sup>28</sup> In 2015, for the first time, it factored in environmental, social and governance (ESG) performance. In the process, it heralded a profound change in the way leaders are assessed and rewarded.

Even weighted at 20%, Ignatius noted, “adding ESG to the equation changed absolutely everything—it upended the rankings more than we anticipated. **Amazon** CEO Jeff Bezos fell from No. 1 to No. 87, for example, and Reed Hastings of **Netflix** fell off altogether.” Storming in at #1 was Lars Rebien Sørensen, CEO of the Danish healthcare company **Novo Nordisk**.<sup>29</sup> HBR's cover reflected the fact that the winner was something of an unknown.

## Emergence Social X

So, it seems, it's no longer good enough simply to be an exponential entrepreneur—you have to be a socially responsible, exponential entrepreneur. Novo Nordisk doesn't use the Social X language, but many aspects of its story link to social impact. And the most striking illustration is the company's push to undermine its own future markets.

### Solving exponential problems

As the world's biggest producer of insulin, used to treat diabetes, **Novo Nordisk** is potentially sitting on a goldmine. Diabetes is a public health emergency in slow motion, says Sørensen.<sup>30</sup> “It may lack the immediacy of communicable diseases such as malaria, tuberculosis, and HIV, but it is a bigger killer globally than all three combined. The International Diabetes Federation (IDF) estimates that 415 million people, or about one in every 11, are living with the condition; in 2015, 28 million more adults had it than in 2014. Without concerted action, the number of diabetes cases could grow by 50% in the next 25 years, meaning there could be 642 million people living with the condition.”

The exponentially growing economic burden could crush health systems. So, Sørensen insists, “we need to look beyond the current horizon of those who already have diabetes and get a firmer grip on the even greater proportion of the population—nearly 2 billion people—who are at risk of developing the condition.” Rather than just boosting production of insulin, Novo Nordisk campaigns to alert the world to the threat of “urban diabetes”. Cities are key, given that this is “where half the world's population, and two-thirds of people with diabetes, now live.”



When cities are planned, managed and governed well, they can deliver prosperity and wellbeing. “But when this isn't the case, inequalities, working patterns, lifestyles, and cultural norms that cities foster can magnify vulnerabilities to diabetes and other chronic conditions.”

So health resources—including investments of people, intellectual capital and financing coming from Novo Nordisk—must be applied in sync with urban planners and city mayors. Pilot studies are under way in Houston, Mexico City, Copenhagen, Shanghai, and Tianjin.

Asked why his company is investing in this way, Sørensen replies: “With our knowledge and position in the market, how can we not do something to help? And if one day we wind up eliminating diabetes, thereby destroying a big part of our business, we can be proud.” Stand back, however, and it's clear that Novo Nordisk is innovating its current business model by solving tomorrow's challenges—and by expressing its core purpose, to improve the health and welfare of people.

The Novo Nordisk example also clearly demonstrates how an exponential mindset involves taking into account the potential for breakdown as well as breakthrough. Most people operate within such short-term time horizons that emerging exponentials—good, bad or ugly—are pretty much invisible to them. HBR's celebration of Novo Nordisk was very much related to the company's efforts to help decision-makers in other sectors spot exponentials that could collapse entire national health care systems, or their equivalents in other sectors.

### Disruption at the base of the pyramid

When considering social outcomes, particularly in emerging and less developed parts of the world, **Base of the Pyramid** and related business models come to mind. These have been pioneered for decades by the likes of Muhammad Yunus and other pioneering social entrepreneurs.

But how does this look when viewed with an exponential lens? We feature, in Case 3 (page 20), a new non-profit initiative in India being built by Infosys co-founder Nandan Nilekani and his wife Rohini, internationally renowned social entrepreneurs. They describe **EkStep** as “a utility, an enabler. Our layered, modular platform allows for the co-creation of solutions that are non-linear, agile and scalable. It amplifies the impact of the current educational ecosystem through partner networking.”

Business models, as mentioned in Chapter 1.2 (pages 12–14), underpin the activities of organizations in many different sectors, including the private, public and citizen sectors. And history makes it clear that many activities now taken for granted in the developed world were first evolved by not-for-profits. In effect, they seed and nurture the market opportunity spaces that others can then address with for-profit business models.

There is also a host of exponential technologies, including solar power and drones, which is giving social development in emerging economies a new impetus. **Off-Grid Electric** and **Zipline** are two examples in point operating in sub-Saharan Africa, featured respectively in Cases 4 and 5 (page 20).

### Taking Social X mainstream, at scale

There are many initiatives in the increasingly vibrant social enterprise field, ranging from **Ashoka** to foundations like **Gates**, **Omidyar**, **Schwab** and **Skoll**.

Business schools are also beginning to pay more attention. But for our money the best current bet in the business world is **B Lab**—the organization behind the rapidly scaling B Corporation movement—featured in Case 6 (page 20). The movement, which challenges the corporate monocultures driven by a single bottom line, takes a leaf from **Novo Nordisk's** book by insisting that all B Corps re-charter themselves around the triple bottom line agenda.

## Emergence Social X

Case 3  
Education digitalized

### Ekstep

Country  
India

Status  
Non-profit social enterprise

Founded  
2015

Website  
[www.ekstep.in](http://www.ekstep.in)

**Purpose**  
Founded by Nandan Nilekani (co-founder of Infosys) and his wife, Rohini Nilekani, Ekstep aims to provide equitable access to numeracy and literacy learning opportunities for primary school children in India.

**Business model**  
Ekstep is creating a scalable education marketplace utilizing an **Open-Source, Multi-Sided Platform** connecting children, teachers and service providers to learning content from diverse content creators on mobile devices, both online and offline. Apart from its role as a **Layer Player**, EkStep also **Leverages Data** on learner actions, gaps, and content consumption.

Case 4  
Solar distribution  
off-grid

### Off-Grid Electric

Country  
USA, operating in Tanzania

Status  
For-profit social enterprise

Founded  
2011

Website  
[www.offgrid-electric.com](http://www.offgrid-electric.com)

**Purpose**  
The vision is to make clean, affordable energy accessible to everyone. The company has created a distributed off-grid solar model that is affordable and backed by next-generation lithium batteries, hyper-efficient appliances and intelligent electronics. In countries like Tanzania, where the poor pay high prices for charcoal, a health- (and sometimes life-) threatening fuel, Off-Grid Electric is creating far-reaching impact in and beyond the energy access and health fields. Founded by a team of serial entrepreneurs and incubated at the **Skoll Centre for Social Entrepreneurship** in Oxford, the company raised US\$70 million in 2015 and is already reaching over 10,000 new households each month.<sup>31</sup>

**Business model**  
Adopting a host of business models, including **Base of the Pyramid**, **Building a Marketplace**, **Cross-Selling** and **Localization**, Off-Grid Electric helps customers with no formal credit to access energy through low prices on a **Pay Per Use** basis, whilst providing access to other **Microfinance** solutions in order to purchase energy-efficient appliances.

Case 5  
Healthcare via  
drones

### Zipline

Country  
USA, operating in Rwanda

Status  
For-profit

Founded  
2014

Website  
[www.flyzipline.com](http://www.flyzipline.com)

**Purpose**  
Zipline aims to make healthcare accessible to those who lack access. The company promised the world's first commercial drone delivery service in 2016, deploying healthcare across Rwanda and potentially overcoming the country's poor transport infrastructure.

**Business model**  
Zipline employs a low-tech approach, using materials like rubber bands for ejection springs, and wax paper for a parachute, cutting cost and complexity, as well as increasing the chances of successful working in rugged and remote terrain. Its business model embraces **Building a Marketplace**, **Increased Functionality**, **Layer Player**, **Lean Production** and **No Frills**. In its first phase, Zipline is working with the Rwandan government to deliver blood on a "just in time" model, reducing delivery times from hours or days in bad weather, to under 40 minutes. Zipline is also working with others, including the **UPS Foundation**, to expand its offerings into vaccine delivery this year. It has attracted funding from the likes of **Sequoia Partners** and **Google Ventures**, and is looking to expand its offerings both beyond healthcare, and beyond East Africa.<sup>32</sup>

Case 6  
Mainstreaming impact  
business models

### B Lab

Country  
USA

Status  
Non-profit social enterprise

Founded  
2007

Website  
[www.bcorporation.net](http://www.bcorporation.net)

**Purpose**  
Through its certification framework, B Lab aims to get all companies to compete not only to be the best in the world, but the best for the world, and thereby create shared and durable prosperity for society. Iconic purpose-led companies like **Patagonia**, **Ben & Jerry's** and **Natura** have joined over 1,700 B Corps across 50 countries, along with a new breed of start-ups including **Kickstarter**, **Etsy** and **Sungevity**. Bigger companies are now also showing interest, among them **Unilever** and **Danone**.

**Business model**  
B Lab's own business model is mainly based on certification fees. But more importantly, they are creating broader system value by helping B Corps to measure and communicate positive impact, introducing new rigor to the process. By certifying as B Corps, companies can now prove that they are "measuring what matters" by answering two key questions: 1) how you run your business; and 2) what your business does to generate revenue designed to create a positive impact. B Lab terms the latter an Impact Business Model (IBM). The B Impact Assessment measures a company's "IBM" on five main dimensions: materiality, durability, differentiation, outcome focus, and verifiability. Over time, perhaps it should be opened up to include breakthrough outcome metrics under the exponential, social, lean, integrated and circular headings?



## 2.3

### Lean X

We must make better use  
of all forms of capital

Breakthrough business  
models will be **lean**,  
optimizing the use of all  
forms of capital, from  
physical and financial,  
through human and  
intellectual, to social  
and natural.

Lean innovation and leaner business models will be central in delivering against the SDGs. In business, the word “lean” links to several concepts—including the lean start-up movement, lean manufacturing, lean services, frugal innovation and more. Tomorrow’s business models must build on this momentum, using resources effectively, creating no waste and maximizing value across entire value networks.

Such business models must optimize value creation across all forms of capital, from conventional forms like physical and financial capital, through newly understood forms like human and intellectual capital, to tomorrow’s understanding of social, cultural and natural capital. They will need to generate market-relevant value without further depleting extra-financial capital.

Lean thinking tracks back to **Toyota** and its drive to squeeze waste out of its operations. The so-called Toyota Way was developed between 1948 and 1975, focusing on seven forms of *muda*, or waste. The ultimate goal: zero waste.

Yet champions of the lean business agenda stress that it is neither a tactic nor just about cost reduction, but a more fundamental—and innovative—way for individuals and organizations to think and act. Organizations in all industries and in the services sector, including healthcare, are using lean principles, as are parts of government.

Lean innovation includes techniques such as identifying the “minimal viable product”, developing an early version rapidly and testing it with customers, and then repeating the process until the product is competitive—or, if it isn’t, pivoting to explore a different approach.<sup>33</sup>

Frugal innovation, which is closely related, is defined as doing more—and better—with less. It is described as “a breakthrough growth strategy enabling companies to develop high-quality products and create more business and social value, while minimizing the use of vital resources such as energy, capital and time. Once the preserve of companies in developing markets, frugal innovation is now being adopted by global enterprises, large and small.”<sup>34</sup>

Significantly, the **Frugal Innovation Hub** notes that “with an estimated trillion-dollar global market for sustainable products and huge cost savings to be gained, frugal innovation is revolutionizing business across industries and reshaping management thinking worldwide. As such, frugal innovation is the key to success in a business landscape increasingly defined by mega-trends such as collaborative consumption, the circular economy, and the maker movement.”<sup>35</sup>

The **Lean Startup** movement and process sees every startup as an experiment that attempts to answer a question. The question is not, “Can this product be built?” Instead, the questions are “Should this product be built?” and “Can we build a sustainable business around this set of products and services?” We suggest that this type of questioning can help not just startups, but any business wishing to deliver on the SDGs.

The biggest opportunity area for lean thinking, design, engineering and management is in the coming race towards a low-carbon economy. As the pressure builds to drive carbon out of every aspect of our economies, we will see growing interest in the offerings of clean energy insurgents and in the carbon productivity approach of companies like **Covestro** (see page 22).



**Emergence**

Lean X

**The future's already here:  
Lean X**

Current demographic data suggest that we are headed towards—and potentially beyond—10 billion people. Meanwhile, greenhouse emissions are pushing us towards—and very likely beyond—the 2 degrees Celsius limit that scientists tell us defines the upper limit of climate stability. So a central, existential challenge involves radically improving the carbon productivity of our economies, businesses, products and services.

The notion of carbon productivity surfaced back in 2008 with a key **McKinsey** study,<sup>36</sup> though there have been parallel threads in the life cycle analysis, cradle-to-cradle and circular economy worlds. Let's zero in on two organizations that have embraced the carbon productivity challenge.

Firstly **Interface**, the carpet company, has long worked to boost its resource efficiency.<sup>37</sup> It notes, "Our environmental footprint is one of the more important metrics we use to track progress towards our Mission Zero goals." As to where the spotlight shines brightest, "Because Interface has the greatest influence on the impacts through the Production Stage Carbon Footprint (cradle-to-gate), this is where we focus most of our activities. The average product carbon footprint of our carpet has been reduced by 31% since 2008."

Interface aims "to become a carbon neutral company by measuring, reducing and offsetting our carbon emissions. In addition, we implemented employee programs to help address their emissions and we sell carbon neutral products through our Cool Carpet program."

Interface's Mission Zero has now morphed into a new phase, Climate Take Back.<sup>38</sup> Taking back our climate is possible, they say, if we make four big changes: (1) only take what can be replaced; (2) see carbon as a resource; (3) restore nature's proven ability to cool; and (4) revolutionize our industries.

Another company embracing carbon productivity is **Covestro**, the former **Bayer MaterialScience**.<sup>39</sup> It has two main product lines: polyurethanes and polycarbonates. The first is used in applications like building insulation, the second in car components.

In both cases, there are energy benefits. Covestro estimates, for example, that during the life of polyurethane insulation panels, they save 70 times as much energy as they take to make—a 70-fold carbon productivity boost.

Covestro has also been developing **Base of the Pyramid** applications of its technologies through its Project Sunrise initiative. Among other things, it has been developing affordable insulation products for use in applications like cool chains (cutting food waste and enhancing farmer incomes) and low-cost housing. The aim: sustainable shared value outcomes.<sup>40</sup>

Some call this *Jugaad*, a Hindi word suggesting "a hack or fix," but which has come to mean ways of finding intelligent, low-cost solutions to any problem. The approach is deep-rooted in India, but also widespread in other emerging economies. Brazilians say *gambiarra*, the Chinese say *zizhu chuangxin* and Kenyans say *jua kali*. In English, we say "frugal" or "bottom-up". As global warming continues, it is clear that *Jugaad*—and linked disciplines—will be needed right across the temperature spectrum.

**From eco-efficiency to value creation**

Eco-efficiency, how a business could save or make money through better management of its energy and resource flows, is but one early dimension in which the Lean agenda has evolved. Now new business models are being created to apply eco-efficiency at scale. Take the example of **Kaer** (pronounced 'Care') in Singapore, featured in Case 7 (page 23), which has transformed air-conditioning systems from a product into a service.

New versions of the Lean agenda apply efficiency principles to all forms of capital used by a business. Clearly, however, there are potential tensions to be managed across the different dimensions of value creation. Here's how Tony Greenham put it as director of economy, enterprise and manufacturing at the UK **Royal Society of Arts** (RSA): "Whilst lean design is good overall," he told us, "applying lean to processes with the sole focus on efficiency (e.g. just-in-time supply chain management, supplier streamlining, eliminating redundancy and so on) runs counter to economic system resilience."

In China, where the giant country's future moves in business will have enormous impact globally, it is interesting to see companies like **Alibaba** beginning to play into this opportunity space by **Repurposing Excess Capacity**. We feature this example in Case 8 (page 23).

But the need for value creation also extends to human capital. **DoctHERs**, a new healthcare digital platform set up by two female doctors in Pakistan, exemplifies this. Featured in Case 9 (page 23), DoctHERs is addressing two critical issues in Pakistan: the gender barriers affecting trained female doctors unable to secure employment, and communities at the base of the wealth pyramid unable to access quality health care.

**A new wave of lean business models**

The rise of Total Quality Management (TQM) and Lean Production models has had a huge impact in terms of squeezing out waste, or what the Japanese call *muda*, over the last several decades. Now new models are in the spotlight, among them **Fractional Ownership, Leasing, Modularity, No Frills** and **Product as a Service**—models used by incumbents and insurgents alike, including **Philips** (page 29) and **Fairphone**. At the more radical end of the spectrum, we see **Produce on Demand, Physical to Virtual** and **Sufficiency Models**. Clearly, Circular models (see pages 27–29) play into this newly developing space, too.

One interesting model that has emerged is **Differential Pricing**, employed by **GRIT**, which we feature in Case 10 (page 23).

**Emergence**

Lean X

Case 7  
Air-conditioning  
as a service

Kaer

Country  
Singapore, operating  
across Asia

Status  
For-profit

Founded  
1993

Website  
www.kaer.com

**Purpose**  
The company designs, builds and operates air-conditioning systems for commercial and industrial buildings on behalf of customers, offering reliable cool air, coupled with energy efficiencies and cost savings to customers. This is important, given that in South East Asia, where air conditioning is the norm within many cities, buildings are responsible for the bulk of many countries' total energy consumption.

**Business model**  
Building owners buy chilled water from Kaer at a fixed rate on a **Pay Per Use** basis. Utilizing a **Product as a Service** model, Kaer then shifts the responsibility of reducing energy consumption away from building operators and owners by taking over and optimizing a building's air conditioning system. It takes on all future costs related to operations and maintenance, including water, electricity, and repair bills. In the process, Kaer cuts costs to building owners, while potentially increasing their profit by lowering the rate of energy consumption using a remotely operated monitoring and verification system.<sup>41</sup>

Case 8  
Reverse logistics  
in China

Alibaba Group

Country  
China

Status  
For-profit

Founded  
1999

Website  
www.alibabagroup.com/en

**Purpose**  
Alibaba's new consumer e-commerce business, Taobao, is hoping to reach consumers from the lower income demographic in rural parts of China who face limited choices, high prices and poor quality—not surprising given the dispersed population and poor logistical infrastructure in these areas.

**Business model**  
Alibaba has invested 10 billion yuan (US\$1.5 million) in logistics, hardware and training to push its e-commerce model into 100,000 villages, setting up rural service centers where it provides computers and monitors, training villagers to serve as its representatives in the centers, and ensure timely delivery of purchases. Traditional business models employed by Alibaba include **E-Commerce**, **Layer Player** and **Long Tail**.

Eventually, and this is the key to the Lean dimension, Alibaba has ambitions to **Repurpose Excess Capacity** by using this same infrastructure and digital platform to sell vegetables and fruits to the cities, whilst increasing incomes for farmers. It claims that this will help in attracting more of China's growing middle class to move back into villages.<sup>42</sup>

Case 9  
New resourcing for  
rural healthcare

DoctHERs

Country  
Pakistan

Status  
For-profit social enterprise

Founded  
2014

Website  
www.docthers.com

**Purpose**  
To connect female doctors to underserved patients in real time, using the latest technology.

**Business model**  
DoctHERs operates a **Multi-Sided Platform** connecting female doctors with patients at the **Base of the Pyramid**. It converts existing community spaces into walk-in clinics where patients are first assessed by nurses or community health workers employed by DoctHERs.

As part of a shift from **Physical to Virtual**, patients are then remotely diagnosed by doctors using a telemedicine system, alongside instruments operated by the nurses. Fees are kept as low as US\$1 per consultation, enabled by a **No Frills** model. As a **Solution Provider**, DoctHERs **Co-locates** various services within each clinic, including a mini-pharmacy, a family planning lab, a test collection point, and tertiary care referral services.<sup>43</sup>

Case 10  
One technology, two products,  
two markets

GRIT

Country  
USA

Status  
Non-profit social enterprise

Founded  
2007

Website  
www.gogrit.us

**Purpose**  
GRIT's purpose is to use technology to improve the lives of wheelchair users in both developing and developed countries, rural and urban terrains.

**Business model**  
Starting out as an **MIT** school project to create a wheelchair that can be used in developing countries, the GRIT team utilized frugal innovation principles to work from the ground up. The result: a US\$250 wheelchair with a unique lever drivetrain that makes it faster than regular wheelchairs, and offers off-road performance well beyond other mobility aids.

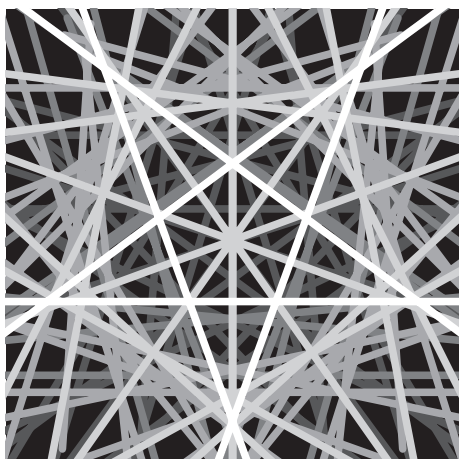
Designed using **No Frills** principles, GRIT utilizes steel and bicycle parts that can be found in any rural village, enabling the wheelchair to be easily repaired anywhere. It is within the price range of humanitarian organizations, to which GRIT sells the Leveraged Freedom Chair (LFC) in bulk domestically. Its experience with the LFC was then **Reverse Engineered**—and modified into a western version, the GRIT Freedom Chair. This now sells in the USA for US\$3,295, less than half the price of competing products.<sup>44</sup>

## 2.4

### Integrated X

It's time to connect  
tomorrow's dots

Breakthrough business  
models will be **integrated**,  
managing financial and  
extra-financial value  
creation across economic,  
social and environmental  
systems.



Experimentation often means disintegration and reintegration. Meanwhile, plain integration is key to successful breakthrough innovation. We see aspects of the integration concept in many of the cases we have spotlighted to date.

If you are an incumbent business, integration tends to mean consolidation, or pulling legacy activities into new configurations. So, for example, a holding group might restructure a set of businesses that are essentially Wave 5 in orientation, to drive new efficiencies. This could be a real improvement in terms of their performance against traditional cost saving metrics, for example, but is unlikely to align the overall business with Wave 6 realities, let alone the SDGs.

It's not clear that most business leaders yet understand this. Surveys of CEOs and other corporate leaders have sometimes shown a surprisingly weak grip on what integrating sustainability considerations into a business implies.

In a survey published in 2010, **Accenture** and the **UN Global Compact** found that of 766 CEOs polled worldwide, 93% thought sustainability important to their company's future success—and fully 81% (compared to 50% in 2009) reported that they had already embedded it.<sup>45</sup>

Many of these CEOs probably meant that they had sustainability programs or even goals and strategies, that they had engaged external stakeholders and that they had produced non-financial reports. But integration means something much more fundamental in the present context. The real test would have been the proportion that had adapted their business models to improve the financial and non-financial impacts of the company, and in tandem adopted a more integrated mindset.

As noted in **SustainAbility's** 2015 report, *Sustainability Incorporated*, quoting Jib Ellison, founder and CEO of **Blu Skye**, and Ram Nidumolu, former COO of Blu Skye, "This new mindset would see business, civil society and nature as deeply and existentially interconnected, acknowledging the limitations of what can be formally analyzed or valued in the marketplace. We call this the integrated mindset."<sup>46</sup>

If we could go back to the 81% of CEO's polled and ask if they see their business as deeply and existentially connected to society, much less to nature, we would surely see a drop in the percentage that claims to have already embedded sustainability. And yet to deliver on the SDGs—and more urgently, to halt any activities that undermine them—business will need to achieve a level of integration that creates social and environmental benefits by the very act of doing business.

This will entail integrating an understanding of social and environmental risks and opportunities across the business (for example, across multiple departments), supply chains (upstream, downstream), sectors (private, public, citizens), and clarifying how the company's core offer is aligned with solutions to the needs of 2030 and beyond.

An important pathway towards integration involves integrated reporting, with its focus on the conciseness, strategic relevance and future orientation of sustainability-related information. But the integration challenge also requires business top teams to think wider, deeper, longer and differently.

Even the best of today's "integrated reports" are mainly a compilation of data and narrative pertaining to forms of capital (e.g. physical, financial, human, intellectual, social and natural), rather than an indication of how the business contributes to an intelligent global effort to track and improve on impacts from fields, farms and fisheries, up through supply chains and companies, and then out to the biosphere, oceans and atmosphere.

In other words reporting doesn't yet illustrate effectively how the company's business model is delivering on positive impacts for these and other systems. Such an ambitious outcome—involving both the mindset shift and ability to execute and deliver on it—is still beyond the reach of many individual companies. But it is a key part of what the world of 2030 requires from us.



**Emergence**

## Integrated X

**The future's already here:  
Integrated X**

How can an incumbent company or industry become an insurgent, a “radical incumbent”? One example featured in many business school case studies is **General Electric** (GE) one of a relatively small group of companies that have reinvented themselves over time.

Here's how *Fast Company* summed up early reactions to GE's Ecomagination initiative when it was launched over a decade ago:

*In 2005, when GE's CEO Jeff Immelt announced that the industrial giant was putting significant resources into a program called Ecomagination, designed to emphasize energy efficiency and ecologically friendly products, you wouldn't have been wrong in scoffing. GE was considered one of the most notorious polluters in American corporate history, infamous for ruining large sections of the Hudson River with run-off from its factories. And a decade ago, revamping an enormous business in the quest to produce less carbon wasn't a mainstream proposition.<sup>47</sup>*

But GE and Immelt proved the skeptics wrong. As *Fast Company* commented, “It has become the lynch pin of a remarkably successful reinvention of GE, the foundation of the company's future, and the vanguard of the global movement towards corporate environmentalism.”

Ecomagination—which at the time of writing had generated over US\$200 billion in sales, while also serving as the spur for GE cutting its water usage and greenhouse gas emissions by 42% and 31%—isn't just a case of great slogans and radical new ideas. It has also significantly invested—to the tune of US\$5 billion by 2010—in clean tech R&D. And early in 2014, GE announced new targets: by 2020 it promised to invest another US\$10 billion in clean technology R&D, and to reduce its own greenhouse gas emissions and water usage by 20%.

But it's easy to overlook a critical ingredient: *integration*. Many GE initiatives had failed without buy-in from mid-level managers and their teams. So processes were developed that put Ecomagination principles at the forefront of product development. Managers now give equal priority to Ecomagination-pioneered criteria, such as environmental impact and resource efficiency.

Less in the public eye, but potentially just as important, has been GE's evolution as a software engineering and Big Data company, targeting the burgeoning Internet of Things sector. As Immelt told **McKinsey**, “Industrial companies are in the information business whether they want to be or not. This is going to happen in the industrial space.”<sup>48</sup>

**System-level integration**

There have been many attempts to better integrate the sustainability agenda, with the SDGs being a recent case in point. Much of the effort, however, has been directed at integrating activity—as in accounting and reporting—across the various forms of capital created or used by business. This is fine, as far as it goes, but there is a much larger integration challenge staring us in the face.

There is generally little or no link between the data and impacts that individual companies report and that which is counted, analyzed and reported by their competitors, customers, other industries and the overall economy. If pan-capital thinking is horizontal, then we also need vertical integration—pulling together every level of business activity to assess progress against the SDGs, for example, and the planetary boundaries frameworks developed by the likes of the **Stockholm Resilience Centre**.

It has stuttered a bit with a change of CEO, but **GRI's** (Global Reporting Initiative's) Technology Consortium, featured in Case 11 (page 26), was a bold attempt to close some of these gaps.<sup>49</sup> The involvement of incumbents (like **HP**, **IBM** and **SAP**) and insurgents (like **Quid**) provides an interesting example of a standard-setting body working to create a new market, a benign sea level rise floating new types of business models.

Given the interconnectedness of the SDGs, we need business—and partnership—models that acknowledge and work across diverse system dimensions. Consider the case of **Grow Asia**, featured in Case 12 (page 26), a multi-stakeholder partnership platform established by the **World Economic Forum**, in collaboration with the **Association of Southeast Asian Nations (ASEAN) Secretariat**. Its unique model, focused on agriculture development, delivers a combination of food security, environmental sustainability and economic opportunity, a high potential case of system-level integration in action.

**Combining new and old technologies**

The latest era of globalization has seen a race to integrate supply chains and value networks around the world as a way of optimizing logistics and cutting costs. At the same time, both new and old technologies have inspired novel business models that are working towards new forms of integration.

Largely associated with the finance sector, Blockchain technology is already beginning to inspire new business models in supply chain management across manufacturing and consumer products. One start-up in this space is London-based **Provenance**, featured in Case 13 (page 26), whose services make it easier to understand where and how our food is made.

In contrast, **LaborVoices**, uses voice recording technology to help factory employees around the world to report on working conditions via their mobile phones, connecting different parts of the value chain to ensure unheard (or ignored) voices—and concerns—are heard. Featured in Case 14 (page 26), LaborVoices offers radical new solutions in relation to labor and human rights challenges.

## Emergence Integrated X

<p>Case 11 Leveraging data at the system-level</p>	<p>Case 12 Linking better livelihoods and environmental sustainability</p>	<p>Case 13 Transparency behind the plate</p>	<p>Case 14 Giving the global workforce a voice</p>
GRI Technology Consortium	Grow Asia	Provenance	LaborVoices
Country The Netherlands	Country Singapore	Country United Kingdom	Country USA
Status Non-profit international organization	Status Non-profit international organization	Status For-profit social enterprise	Status For-profit company
Founded GRI 1997 Consortium 2015	Founded 2015	Founded 2013	Founded 2010
Website www.globalreporting.org	Website www.growasia.org	Website www.provenance.org	Website www.laborvoices.com
<p>Purpose Having mainstreamed the process of sustainability reporting in organizations using its evolving standards, GRI formed the Consortium to help businesses go beyond traditional reporting. The brief of the early-stage Consortium is to develop new solutions and uses for sustainability data both within individual companies, and across industries, sectors and economies.</p>	<p>Purpose Around half of South East Asia's 600 million people live in rural areas, and the region has the potential to become a major part of the solution to the global food security challenge. Grow Asia convenes, facilitates, and helps scale partnerships involving smallholders, governments, companies and others to boost smallholder farmers' productivity whilst ensuring environmental sustainability.</p>	<p>Purpose In these days of exponentially radiating supply chains, it has become much harder to know where what we consume comes from—and how it has been produced. Provenance enables brands and individuals to take steps toward greater transparency by tracing the origins and histories of products.</p>	<p>Purpose LaborVoices helps factory employees around the world to easily and anonymously report on working conditions inside their factories using their mobile phones. This minimizes the risk of workers being coached on how to answer audit checks, in the context of threats or fears that they might be fired. They can respond more truthfully, while providing companies with a more cost-effective, reliable and personalized way of auditing labor issues across their supply chains. Recordings with information about local services, from healthcare to trade unions, are sent back to workers to support them.</p>
<p>Business model GRI operates as an <b>Orchestrator</b>, using an <b>Open Business</b> model—bringing together partners across the ecosystem—to <b>Leverage Data</b> and <b>Build a New Marketplace</b> for novel applications and solutions. Potential business models for GRI as this builds out include <b>Affiliation</b> and <b>Licensing</b>, while businesses that are part of the consortium could be enabled to innovate their own business models.</p>	<p>Business model As an <b>Orchestrator</b>, Grow Asia has already reached nearly half a million smallholder farmers, and aims to bring this number to 10 million by 2020. A large part of its remit is to help farmers and other partners utilize business models such as <b>Direct Marketing</b>, <b>Digitization</b>, <b>Direct Selling</b>, <b>Inclusive Sourcing</b> and <b>Micro-Finance</b>. These are aimed at increasing farmers' productivity, profitability, and environmental sustainability by 20%.<sup>50</sup></p>	<p>Business model Provenance offers full transparency in food and product supply chains using Blockchain technology, which uses a global <b>Peer-to-Peer</b> network to provide an <b>Open Source</b> platform that can deliver neutrality, reliability and security.<sup>51</sup> <b>Leveraging Customer Data</b>, the business model is based on <b>Subscriptions</b> from users. The benefit for them is that the process can give a product a form of digital passport to authenticate key information, and help end fake claims and counterfeiting.</p>	<p>Business model As a way of <b>Leveraging Data</b>, polling responses are anonymous, aggregated and vetted, and presented back to subscribing companies via an online dashboard. Companies pay a <b>Subscription</b> to get real-time visibility of their supply chains, along with a case management and escalation process managed by LaborVoices, so they can deal speedily with urgent issues like child labor or fire safety.<sup>52</sup></p>

## 2.5

### Circular X

Breakthrough solutions deliver cradle to cradle value

Breakthrough business models will be **circular**, sustaining inputs and outputs at their highest value in both technical and biological cycles.



All businesses must strive to become completely circular, designed to sustain products, components and material inputs and outputs at their highest utility and value at all times. Crucially, the circular economy concept distinguishes between technical and biological cycles. In both domains, the emerging discipline of biomimicry will be vital, ensuring business neither creates waste, nor undermines essential material and nutrient cycles, or wider ecological and social systems.

The push for circular business models has been under-way for decades. The year 2016 marks the 50th anniversary of Kenneth Boulding's vision of a future "spaceman economy" on a "spaceship Earth".<sup>53</sup> He concluded, "Man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form." Boulding died in 1993, but how would he rate our progress today?

As James Greyson of the **Blindspot** think-tank notes, "A global environmental movement of millions of people has undertaken millions of initiatives every year for decades. The circular economy vision has been reinvented and relaunched with new language roughly every decade since the 1960s. There have been multitudes of conferences, hefty reports and case studies of circular resource flows. All that's missing is any actual circular economy." <sup>54</sup>

When Boulding first talked about circularity, annual global materials consumption was around 20 billion tonnes.<sup>55</sup> Today it's around 80Gt <sup>56</sup>—and as little as 6% of this gets recycled into circular flows.<sup>57</sup> "The reckless, exploitative and violent behaviours characteristic of Boulding's 'cowboy economy' remain pervasive," Greyson concludes.

But, as a meme, the circular economy has gained huge traction. The idea is that the economy should be restorative and regenerative by design. And it assumes "a continuous positive development cycle that preserves and enhances natural capital, optimizes resource yields, and minimizes system risks by managing finite stocks and renewable flows." <sup>58</sup>

The financial side of the business case is increasingly compelling.<sup>59</sup> **McKinsey** estimates that shifting towards circularity could add US\$1 trillion to the global economy by 2025, creating 100,000 new jobs within five years. Under the **Waste & Resources Action Programme's** Circular Economy 2020 Vision, the **European Union** could benefit from an improved trade balance of £90 billion (US\$120 billion) and the creation of 160,000 jobs.

Among key initiatives are the Circular Economy 100, launched by the **Ellen MacArthur Foundation**, and Project MainStream, combining the forces of the **World Economic Forum**, the Ellen MacArthur Foundation, and McKinsey & Company. This is led by the CEOs of **Averda, BT, Tarkett, Royal DSM, Ecolab, Indorama Ventures, Philips, SUEZ** and **Veolia**. The focus is on systemic stalemates in global material flows that are too big or too complex for an individual business, city or government to overcome alone, and on enablers of the circular economy such as digital technologies.

The growing scale of Boulding's cowboy economy is captured in the Ellen MacArthur Foundation's recent study of plastics in the ocean.<sup>60</sup> Most plastic packaging is used only once; 95% of the value of plastic packaging material, worth US\$80–120 billion annually, is lost. Such materials generate negative externalities valued at US\$40 billion. And the business-as-usual scenario suggests that by 2050 our oceans will contain more plastics than fish (by weight), with the plastics industry consuming 20% of oil production, and 15% of the annual carbon budget.

Clearly, along with an opportunity to think Lean for better use of resources, there's an exponential task ahead to be completely Circular if we are to close such loops.<sup>61</sup> Cities will play a key role, as illustrated by **Seoul Metropolitan Government** and its 'Sharing City' initiative (page 29). And a key discipline over time will be biomimicry, which uses lessons learned about how to design materials, processes, products and habitats on the basis of the solutions nature has evolved in the face of similar challenges over the space of 3.8 billion years.



**Emergence**

## Circular X

**The future's already here:  
Circular X**

Most civilizations have had a circular element to their economies, even if most ended up overdrawing their natural capital account. Now the scale and pace of population growth, coupled with largely linear (take-make-waste) mindsets, threatens to undermine our economies and, potentially, our own civilization. As a result, whether it focuses on carbon in the atmosphere or plastics in the oceans, we now see rapidly growing interest in closing such loops with circular solutions.

Insurgents are allying with incumbents to create new models. Take the example of the Dutch healthcare, consumer products and lighting company **Philips**, in partnership with the **Turntoo Foundation**. As the **Ellen MacArthur Foundation** notes, “Architect Thomas Rau worked with Philips to purchase light as a service. The end result was a bespoke ‘pay-per-lux’ lighting system to fit the requirements of the space, at a manageable price.”<sup>62</sup> A key element of the model is that Philips retains control over the equipment, ensuring better maintenance, reconditioning and recovery.

That wasn’t something that Philips envisaged from the start. Instead, Rau and his team insisted the giant Dutch company put its thinking cap on if it wanted to secure the influential architecture practice’s business. The main Philips contact initially said he would have to operate in a “skunkworks” fashion, keeping his bosses in the dark. Happily, it worked out.

The idea of selling services rather than products has been around for decades. Manufacturers can retain greater control over the items they produce and over the embodied energy and materials. The customer benefits too, only paying for the service used—and often enjoying a better outcome, because the manufacturer has greater interest in providing long-life products.

As Thomas Rau recalls: “I told Philips, ‘Listen, I need so many hours of light in my premises every year. If you think you need a lamp, or electricity, or whatever—that’s fine. But I want nothing to do with it. I’m not interested in the product, just the performance. I want to buy light, and nothing else.’” Philips ended up creating a minimalist light plan making as much use as possible of the building’s natural sunlight, again to avoid providing a surplus of material or energy.

The team worked with an installation partner, **Cas Sombroek**, and used an LED light fitting for ceiling systems, adapted to be hung in high-roofed offices. A combined sensor and controller system helps keep energy use to a minimum, dimming or brightening the artificial lighting in response to motion or the presence of daylight.

The result: a bespoke lighting system that meets the requirements of the **Rau Architects** space, at a manageable price. Further, by moving from a one-time sale to a ‘pay per lux’ model in which Philips maintains ownership of the materials, Philips can recover the materials when necessary, while Rau Architects also benefit from the option to adapt or upgrade the setup.

Rau went on to set up Turntoo, an intermediary platform that treats products as resource banks, facilitating resource management between manufacturer, supplier and end-user. Having seen the potential of the approach, Philips are also now further developing the underpinnings for this business model—an example we examine further in Case 15 (page 29).

**Closing the loop**

Metals like gold and silver have been recycled forever, including in companies like **Johnson Matthey** that use precious metals in products like catalytic converters. Aluminum is another metal where the loop has been closed.

In the case of **Novelis** and **Ford**, featured in Case 16 (page 29), a cross-industry partnership was key to enabling closed loop recycling.

And there are novel ways of closing the loop emerging, thanks in part to the creativity spurred by all five of the big themes covered—Exponential, Social, Lean, Integrated and Circular. A fascinating example comes from the field of soil carbon capture—and involves **Carbon Nation**, featured in Case 17 (page 29).

More broadly, long-standing models like **Industrial Symbiosis** and **Closed-Loop Production** need an injection of new vigor, while models like **Circular Supplies**, **Collection Service**, **Dematerialization**, **Rematerialization** and **Trash to Cash** are all seeing acceleration in the pace of innovation. The push towards more circular forms of production and consumption has also been given a big shunt forward with **Peer to Peer**, **Repurposing Excess Capacity** and **Multi-Sided Market** models.

**Not just for business?**

The past couple of decades have seen a growing focus on what companies can do on sustainability, but the nature and scale of the challenges are now helping to expand the focus to the role of cities. New platforms have emerged to network cities in this area, including **C40**.

When it comes to circularity, it is interesting that the **Seoul Metropolitan Government** declared Seoul a “Sharing City” in 2012—and has since launched various initiatives to bolster the city’s infrastructure to make it conducive towards “sharing” efforts. This example is featured in Case 18 (page 29).

## Emergence

### Circular X

Case 15  
'Pay per lux' lighting

### Philips

Country  
The Netherlands

Status  
For-profit multinational

Founded  
1891

Website  
[www.philips.com](http://www.philips.com)

Purpose  
The company's goal is to make the world healthier and more sustainable through innovation. In 2012, it began to embed circular economy thinking into both its strategic vision and mission, using it as a driver for innovation, to better deliver on the needs of its customers.

Business model  
Across its lighting business, Philips utilizes a **Product as a Service** model—where customers **Lock-In** and pay for light, while Philips installs, maintains, and both recovers and recycles lighting units at the end of life, generating additional revenues and lowering resource costs. This employs **Trash to Cash** thinking and promotes a **Sufficiency Model**. In its healthcare business, Philips utilizes a similar **Leasing** model, refurbishing used units for customers.<sup>63</sup>

Case 16  
Closed-loop requires partnership

### Novelis + Ford

Country  
Both USA

Status  
Both are for-profit multinationals

Founded  
Novelis 2005  
Ford 1903

Website  
[www.novelis.com](http://www.novelis.com)  
[www.ford.com](http://www.ford.com)

Purpose  
Novelis and Ford have built an infrastructure that ensures Ford's automotive aluminum is recycled within a closed loop process, recreating the same automotive sheet over again.

Business model  
The partnership required significant investment—including halting one of Ford's manufacturing facilities to enable the switch from steel to aluminum, as well as the construction of new recycling infrastructure by Novelis to handle the scrap. Both companies also collaborated on the design of vehicles to deliver the aluminum between both companies' sites.<sup>64</sup> The business models used here include **Circular Supplies, Collection Service, Industrial Symbiosis, Local Loop** and **Trash to Cash**.

Case 17  
Soil carbon capture technologies

### Carbon Nation

Country  
USA

Status  
Non-profit organization

Founded  
2010

Website  
[www.carbonnationmovie.com](http://www.carbonnationmovie.com)

Purpose  
One of the most effective ways of stabilizing the climate, boosting soil fertility and increasing biodiversity on farms, would be to use Soil Carbon Capture & Storage (SCCS) technologies that are evolving rapidly. In a study for the **Shell GameChanger** program, Carbon Nation and **Arizona State University** proposed a fascinating spectrum of potential business models that could help drive this area forward.<sup>65</sup>

Business model  
Proposed business models:\*

- Where all CO<sub>2</sub> emitted from each gallon of fuel sold is stored in the soil, verified by a third party and purchased by the company from "soil carbon ranchers" enrolled in a special program.
- Providing ranchers short-term cash to enable them to reduce risks of implementing ranching changes in the form of a pre-purchase of a certain volume of carbon storage credits (e.g. 10% of estimated 5 year total) plus right of first refusal on any additional credits.
- Setting up a massive online sharing and big data community that enables education, best practice exchange and progress tracking between rancher/farmers and corporations or institutions seeking data or access to potential regenerative agriculture customers.

Case 18  
Seoul's "Sharing City" Initiative

### Seoul Metropolitan Government

Country  
South Korea

Status  
Government body

Founded  
Initiative 2012

Website  
<http://english.sharehub.kr>

Purpose  
Spearheaded by Seoul's mayor since 2011, Park Won Soon—a former activist, lawyer and social entrepreneur, the initiative's goal is to connect people to sharing services and to each other, recover a sense of trust and community, reduce waste and over-consumption, and activate the local economy.

Business model  
Early successes have included impressive growth amongst Seoul's most successful sharing enterprises in areas like car sharing, parking lots and children's clothes, utilizing a myriad of business models including **Crowdsourcing, Leverage Customer Data, Localization, Open Business, Peer to Peer, Rent Instead of Buy, Repurposing Excess Capacity, Sufficiency Models** and **Multi-Sided Platform**.

Seoul is geared towards further diversifying the process, introducing more than 300 initiatives by 2018, with the potential to save city residents 12 billion won (US\$11 million) annually, and the Seoul Metropolitan Government 1.18 trillion won (US\$1.1 billion). In other metrics, the process is forecast to create 1,280 new jobs and to cut CO<sub>2</sub> emissions by 29,800 tons.<sup>66</sup> The initiative has included introducing legislation to promote sharing, creating a Seoul Sharing Hub as a "citizen gateway" to all the sharing related services and businesses in Seoul, as well as to the subsidies, grants and office space needed to incubate sharing businesses.

\* If fossil fuel companies like Shell use soil carbon capture as camouflage or even as basic offsetting, they should be challenged and stalled. But if they use such initiatives and investments as a way to bridge to more sustainable energy and agriculture within a circular economy, we should celebrate and support such schemes.

3.0  
Breaking  
Through

3.1  
Conclusions &  
Recommendations  
It's time to disrupt  
ourselves

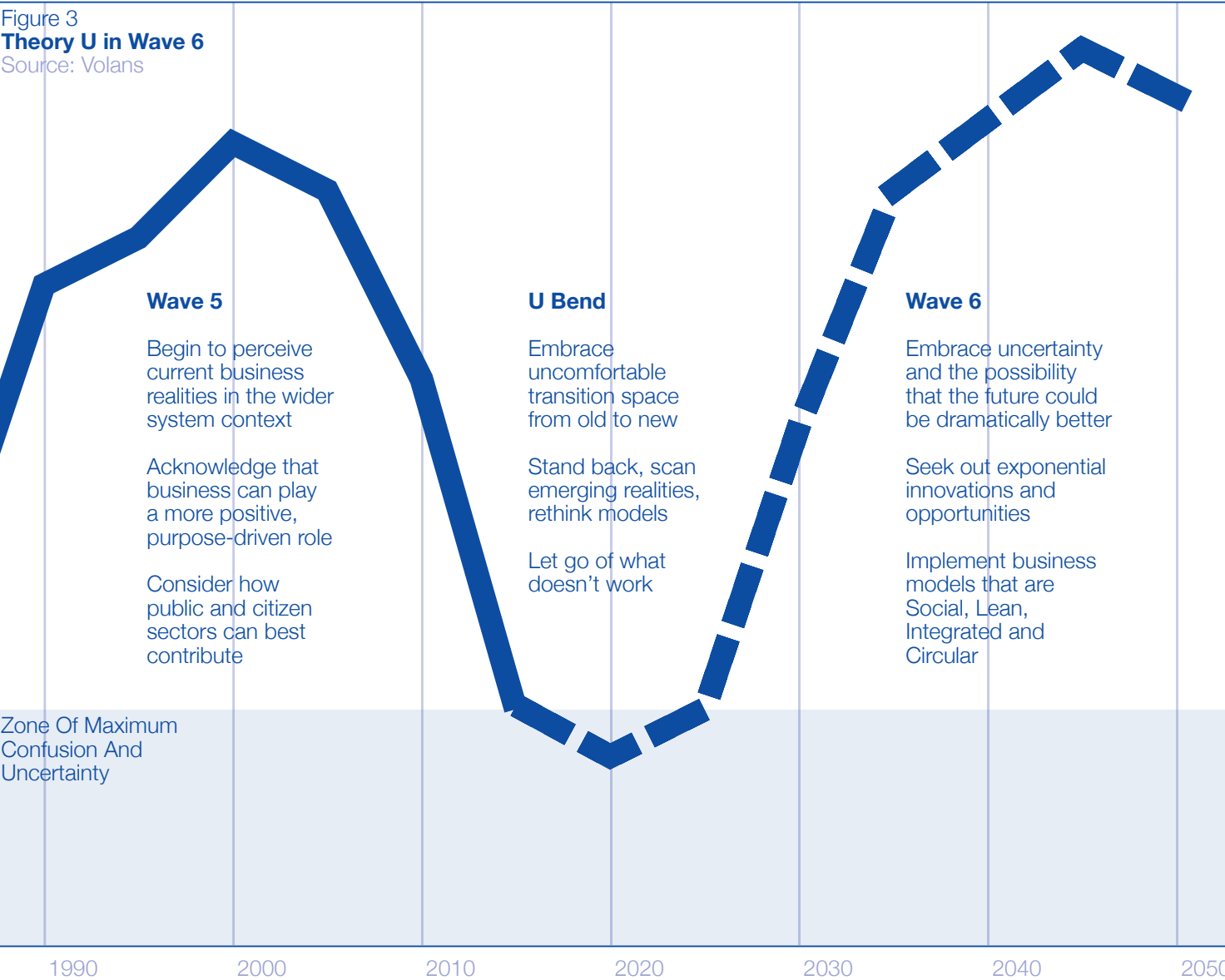
Despite apparent evidence to the contrary, the period 2016-2025 could prove to be the Breakthrough Decade, a period in our collective history where changes that have been talked about emerge as realities. As is always the case in such times, this will not be because we decide to be moral or good, but because events increasingly press in and demonstrate the necessity of urgent, effective action. In short, we are experiencing the birthing pains of a new order. It has geopolitical, economic, social, cultural and moral dimensions. Times like these come along once in a working lifetime, at best.

To sidestep this risk and ensure that business, markets and economies align around the trajectories sketched in the Sustainable Development Goals, it helps to understand where we are in the wider macroeconomic landscape. Our analysis suggests that we are in the late stages of a long wave economic cycle powered—among other things—by new forms of information technology. As that wave now begins to give way to a new wave, bringing with it new forms of digitalization and low carbon technology, the global business community will need more than just the SDGs as a guide.

The sustainable development agenda, which in its current form will be 30 years old in 2017, is maturing and pushing into the mainstream. At the same time, the mainstream is pushing into the sustainable development realm, with all of its competing priorities—and in the process bringing significant additional risks of diluting the agenda.

Beyond a series of commissions and reports, we see the need for a number of major global projects designed to act like “strange attractors” in the economic landscape. For physicists, strange attractors are emergent features in seemingly chaotic environments that help create new patterns of energy flows and activity.

Figure 3  
Theory U in Wave 6  
Source: Volans



We need to drive a process of convergence across the different elements that now make up the global Sustainability Industry. We have focused in this report on five of these: the Exponential, Social, Lean, Integrated and Circular components. Clearly there are others, but taken together, these five characteristics can usefully inform the mindsets and business models needed in the private, public and citizen sectors.

The case examples in earlier chapters are suggestive at best, yet they indicate some of the emergent properties that must shape tomorrow's business mindsets and models.

Testing many examples with our basic heatmap approach (Panel 2, page 14), we found very few that made the full Breakthrough cut—although a fair few had at least some elements of what we must now look for.

For leaders in mainstream business, and those in the Sustainability Industry who aspire to shape and inform the necessary transformations in the economic, social, environmental and governance realms, the next steps look remarkably like certain aspects of Otto Scharmer's "Theory U"<sup>67</sup> (Figure 3, page 30).

We find ourselves potentially moving through one of history's great turning points. To push into the new opportunity spaces, we must work out how to let go of what we know and explore key aspects of what comes next. We outline four key recommendations in Panel 3.

In the spirit of the above, and in partnership with the **United Nations Global Compact, Volans** has launched *Project Breakthrough* – an online platform showcasing how business leaders are thinking beyond incremental sustainability and embracing disruption and exponential thinking to drive new forms of value.

[www.projectbreakthrough.io](http://www.projectbreakthrough.io)

### Panel 3 Recommendations

#### 1 Shift the Global C-Suite sustainable development dialogue

Shift from the negative to the positive, and from the incremental to the exponential. It is time for businesses to shake up the thinking of their top teams. Next steps include:

- Work out how to expand the focus from negative impacts and externalities to positive impacts and externalities.
- Take your top team on an experiential learning journey to a center of breakthrough innovation, be it Silicon Valley or a tech hub in South Africa, and then to a slum in a major urban center.
- Bring in innovators and entrepreneurs who have an exponential mindset, to test your thinking, strategies and business models.
- Diversify your Board with one or more senior appointments from the world of breakthrough change.

#### 2 Build the "Bloomberg Terminal" of breakthrough market intelligence

The market intelligence and forecasting industry is massively fragmented. With honorable exceptions like **McKinsey**, some parts of **Bloomberg** (like their New Energy Finance unit) and **Verdantix**, it is not yet invested in the SDG-driven market space. The best way to trigger action may be to launch something competitive. Next steps include:

- All the member companies of business-to-business platforms like the **UN Global Compact**, the **World Business Council on Sustainable Development** and **The B Team** to share key elements of market intelligence where it bears on the SDG opportunities.
- Early sharing on a suitable platform, or platforms, to be followed up with regular progress updates and networking events.

#### 3 Co-evolve the "Amazon.com" of business models

The field of business model research is in need of a meta-language, or a way of bringing together multiple approaches to create a converged set of models in service of the SDGs. Next steps include:

- Identify, monitor and investigate business models based on multi-dimensional value creation, for example those used by the growing number of B Corporations.
- Platforms such as **The Business and Sustainable Development Commission** and the UN Global Compact could launch a Challenge Prize (e.g. as developed by the **X Prize Foundation**<sup>68</sup> or **Nesta**<sup>69</sup>) to identify the best proposal for developing this resource for innovators, entrepreneurs, intrapreneurs, investors and policy-makers.
- The same approach could also converge with recommendation 2, with the eventual platform combining intelligence on markets and business models.

#### 4 Create a global equivalent of the US Office of Technology Assessment (OTA)

Monitor, challenge and support those who are developing the next generations of technologies, including those linked to data (e.g. big data, blockchain, machine learning, virtual reality, artificial intelligence), manufacturing (e.g. 3D printing, robotics, autonomous vehicles), genomics (e.g. synthetic biology), materials (e.g. nanomaterials), energy (e.g. renewables, smart grids, new forms of nuclear power) and climate solutions (e.g. carbon capture and storage, geoengineering). Next steps include:

- Review the history of the OTA (launched in 1972 and closed in 1995), a model widely copied around the world. This was an office of the United States Congress, whose purpose was to provide Congressional members and committees with objective and authoritative analysis of the complex scientific and technical issues of the late 20th century.
- Pull together existing efforts in new ways that can better inform the process of delivering the SDGs, evolving new conversations and partnerships with Wave 6 players as we did with their Wave 5 counterparts.



## 1 Glossary of Business Models

There are numerous business models and many different ways to categorize them, about which we do not go into detail in this report but encourage further reading. For quick reference, we offer below a short-hand glossary of some of the business models highlighted in ***bold italic*** throughout this report.

**Add-On** The core offering is priced competitively, but extras drive the price up. Customers benefit from a variable offer they can adapt.

**Affiliation** Supporting others to sell products successfully and benefitting directly from successful transactions. Usually uses some kind of a pay-per-sale system.

**Aikido** Allows a company to offer something diametrically opposed to the image and mindset of the competition. The novelty of the offering attracts a particular type of customer.

**Auction** Selling a product or service to the highest bidder.

**Base of the Pyramid** The product or service targets customers positioned at the base of the wealth pyramid at an affordable price point. Despite small profits with each product sold, companies benefit from the higher sales numbers.

**Barter** Exchanging goods or services with no transfer of money.

**Behavior Change** Stimulating customers to embrace new behaviors, such as reducing consumption or modifying daily habits.

**Building a Marketplace** Reinforcing the marketplace through the use of social programs, local market adaptation, and other services such as financing mechanisms or technical assistance.

**Buy One, Give One** Using a portion of the profits from the sale of a product or service towards donating a similar product/service to those in need.

**Cash Machine** Customer pays up-front for the products sold before the company has to cover any associated expenses.

**Circular Supplies** Using renewable, bio-based or fully recyclable materials to replace single-lifecycle inputs.

**Closed-Loop Production** Virtuously recycling the material used to create a product back into the production system.

**Collection Service** Providing a service to collect old or used products from customers in a convenient manner.

**Consumer Lock-In** A value proposition that entices customers to continue using a specific product or service regularly.

**Cooperative Ownership** Where companies are owned by members.

**Cross-Selling** Services or products from outside the business are added to the offerings.

**Crowdfunding** Enabling entrepreneurs to tap into the resources of a wider network of people to raise money.

**Crowdsourcing** Solutions to tasks or problems are generated via an anonymous crowd, with contributors receiving some incentives.

**Customer Loyalty** Customers are retained by providing value over and above the actual product or service itself.

**De-Materialization** Reduction in the amount of materials used in the production of products.

**Differential Pricing** Charging more to those able to afford, and subsidizing those who cannot.

**Digitization** Turning existing products or services into digital versions of themselves, offering advantages such as more rapid distribution.

**Direct Selling** Where products are available directly from the manufacturer or service provider. Savings from cutting out the middleman are passed on to the customer.

**E-Commerce** Traditional products or services are delivered through online channels only.

**Experience Selling** Value of a product or service is increased by an additional customer experience.

**Flat Rate** A single fixed fee is charged for a product or service, regardless of actual usage.

**Fractional Ownership** Sharing of a certain asset class among a group of owners.

**Franchising** Independent franchisees bear the risk of local operations whilst being licensed to use the franchisor's brand name, products and corporate identity.

**Freemium** Allowing users to access a proprietary product or service for free, but charging a premium to access advanced functionalities.

**From Push to Pull** Decentralization, adding flexibility to a company's processes in order to be more customer-focused.

**Guaranteed Availability** Makes the customer's needs central to decisions within the enterprise and the shaping of the value proposition.

**Hidden Revenue** Main source of revenue comes from a third party who cross-finances any free or low-priced offering that attracts users. Advertising is a common application.

**Inclusive Sourcing** Shifting the focus of sourcing from volume and price, to supporting the farmer or producer.

**Increased Functionality/Services** Uncovering multiple, alternative, uses for an existing product, resulting in fewer products required.

**Industrial Symbiosis** Sharing of services, utility, and by-product resources among industries to improve resource efficiency.

**Ingredient Branding** Inclusion of a branded ingredient to a product and stressing the added value or positive association.

**Innovative Product Financing** Leasing or renting products to customers.

**Integrator** Company has command of the majority of steps in the value-adding process, including all resources and capabilities in terms of value creation.

**Layer Player** A specialized company limited to providing one value-adding step to different value chains, thus benefiting from economies of scale, more efficient production and specialized expertise.

**Lean Production** The elimination of waste within a manufacturing system, or the creation of more value for customers with fewer resources.

**Leverage Customer Data** Creating new value by collecting customer data and preparing it in beneficial ways.

**Licensing** Developing intellectual property that can be licensed to other manufacturers, transforming intangible assets into money.

**Local Loop** Co-locating of production processes in countries or regions where the businesses' main markets are.

**Localization** Favoring local and/or community-based production and consumption.

**Long Tail** The bulk of revenue is generated through a "long tail" of niche products, which individually, demand neither high volumes nor a high margin.

**Make More of It** Where know-how and other assets in a company are offered to other companies, creating additional revenue using slack resources.

**Mass Customization** Customizing products through mass production using modular production systems that enable efficient individualization.

**Microfinance** Providing low-income, financially excluded, customers with small loans, and at times access to other financial services.

**Micro-Franchise** Traditional franchising with a focus on creating economic opportunities for the poor to become micro-entrepreneurs.

**Modularity** Designing a product based on smaller component parts that can be independently created, purchased, used and replaced.

**Multi-Sided Platform** Creating value by enabling direct interactions between two (or more) groups, typically through an intermediary platform. Success is dependent on attracting more users to all sides.

**No Frills** Focusing on the necessary minimum to deliver the core value proposition, where cost savings are shared with the customer.

**Open Business** Where collaboration with partners in the ecosystem becomes a central source of value creation.

**Open Source** Where the source code of a product is made freely accessible for anyone.

**Orchestrator** Where a company focuses on core competencies within the value chain, outsourcing and coordinating other segments.

**Pay for Success** Performance-based contracting, typically between providers of social services and governments.

**Pay Per Use** Actual usage of a service or product is metered, and customers pay for what is effectively consumed.

**Pay What You Want** The buyer pays any desired amount for a given commodity, sometimes even zero. Seller benefits from a larger number of customers.

**Personalization** Personalization of products through the use of data.

**Peer to Peer** Based on cooperation among individuals in a group or community connected via a meeting point, usually an online platform.

**Physical to Virtual** Replacing brick and mortar infrastructure with virtual services.

**Produce on Demand** Producing a product only when a customer order is made.

**Product as a Service** Customers pay for the functionality of a product, without the responsibility of repairing, replacing or disposing it.

**Razor and Blade** Basic product is cheap or given away for free, while the consumables are expensive and sold at high margins.

**Rematerialization** Sourcing materials from recovered waste to create entirely new products.

**Rent Instead of Buy** Customers rent the product, reducing the capital typically needed to access it.

**Repurposing Excess Capacity** Excess capacity is mobilized in new ways, or with new customers.

**Revenue Sharing** Sharing revenues with ones stakeholders.

**Reverse Engineering** Obtaining a competitor's products, taking it apart and using the information obtained to produce a similar or compatible product. Products are offered at a lower price because of no investment in research or development is required.

**Reverse Innovation** Simple, inexpensive products that have been developed within and for emerging markets.

**Self-Service** Part of the value creation of the service or product is transferred to the customer in exchange for a lower price.

**Shop in Shop** Instead of opening new branches, a company finds a partner whose branches can profit from integrating its offerings.

**Solution Provider** Offering comprehensive coverage of products and services in a particular domain, consolidated at one point of contact.

**Stewardship Model** Where products and/or services are delivered via means that take into account biodiversity protection, ethical trade, consumer care, etc.

**Subscription Model** Customers pay a recurring fee to gain ongoing access to a product or service.

**Sufficiency Model** Where customers are encouraged to consume less – e.g. extending the product life, encourage product take-back, product exchange, premium branding, etc.

**Supermarket** A company sells a large variety of readily available products and accessories under one roof. Customers are attracted to the wide variety, while economies of scale yield advantages for the company.

**Trash to Cash** Used products are collected and either sold or transformed into new products. Resource costs for the company are practically eliminated.

**Ultimate Luxury** Where a company distinguishes its products or services by offering high standards of quality or exclusivity.

**User Design** Where a company supports customers to apply their creativity and preferences through services such as an online shop, or design software – resulting in the customer being also the manufacturer.

**White Label** A White Label producer allows other companies to distribute its goods under their own brand name.

---

## Sources

Oliver Gassmann, Karolin Frankenberger & Michaela Csik (2014). *The Business Model Navigator*, FT Publishing International.

Lindsay Clinton and Ryan Whisnant. *Model Behavior: 20 Business Models for Sustainability*, SustainAbility, 2014. <http://sustainability.com/our-work/reports/model-behavior>

*The Circular Business Model Toolkit*, Forum for the Future & Unilever, 2015. <https://www.forumthefuture.org/project/circular-economy-business-model-toolkit/overview>

*Circular Advantage: Innovative business models and technologies to create value in a world without limits to growth*, Accenture, 2015. <https://www.accenture.com/gb-en/insight-circular-advantage-innovative-business-models-value-growth>

Nancy Bocken, Samuel Short, P. Rana & Steve Evans (2013). A literature and practice review to develop sustainable business model archetypes, *Journal of Cleaner Production*, Vol. 65, pp.42-56. <http://www.sciencedirect.com/science/article/pii/S0959652613008032#>

## 2 References

- 1 Mark Bonchek, How to create an exponential mindset, *Harvard Business Review*, July 27, 2016. <https://hbr.org/2016/07/how-to-create-an-exponential-mindset>
- 2 *Our Common Future*, UN World Commission on Environment and Development, 1987. <http://www.un-documents.net/our-common-future.pdf>
- 3 How to lose half a trillion dollars, *The Economist*, October 12 2013. <http://www.economist.com/news/briefing/21587782-europes-electricity-providers-face-existential-threat-how-lose-half-trillion-euros>
- 4 Erin Griffith, Some assembly required, *Fortune*, July 1 2016, pages 21–29.
- 5 Wikipedia website. [https://en.wikipedia.org/wiki/holocene\\_extinction](https://en.wikipedia.org/wiki/holocene_extinction)
- 6 Ellen MacArthur Foundation website: <https://www.ellenmacarthurfoundation.org/circular-economy/overview/concept>
- 7 Kevin Kelly talks of just two industrial revolutions: the rise of “Artificial Power” and now the rise of “Artificial Intelligence”. <http://longnow.org/seminars/02016/jul/14/next-30-digital-years>  
Meanwhile, Klaus Schwab of the World Economic Forum talks in terms of four industrial revolutions in his book, *The Fourth Industrial Revolution*. We prefer the greater granularity of the long waves analysis originated by Nikolai Kondratiev, Joseph Schumpeter and others, including the Natural Edge Project. This is complemented by work since 1994 by SustainAbility, and then Volans, on a series of societal pressure waves since 1960. <http://volans.com/2014/05/get-ready-for-the-breakthrough-decade>  
This work underpins the orange line in Figure 1, sketching the emergence of a new scientific (and potentially also economic) paradigm over the same timescale.
- 8 For a better sense of the exponential dynamics that have driven both the socio-economic upsides of capitalism—and the environmental downsides—take a look at the planetary dashboard developed for the Great Acceleration website. <http://www.igbp.net/globalchange/greatacceleration.4.1b8ae20512db692f2a680001630.html>
- 9 The societal pressures waves have been tracked since 1994, first at SustainAbility and more recently at Volans.
- 10 Brexit: Asian Powers Warning Over Global Stability, BBC, 27 June 2016. <http://www.bbc.co.uk/news/business-36632934>
- 11 The Best-Performing CEOs in the World, *Harvard Business Review*, November 2015. <https://hbr.org/2015/11/the-best-performing-ceos-in-the-world>  
Note: Novo Nordisk announced late in 2016 that Sørensen would step down as CEO.
- 12 Feike Seijbesma, Our minds are wired to fear only short-term threats, *World Economic Forum / Medium*, 28 June 2016. <https://www.weforum.org/agenda/2016/06/how-to-thrive-with-long-term-solutions-for-the-fourth-industrial-revolution>
- 13 Volans, 2013, *The Phoenix Economy*. <http://archive.volans.com/wp-content/uploads/2013/03/The-Phoenix-Economy.pdf>
- 14 Robert Eccles and George Serafeim, “Top 1,000 companies wield power reserved for nations”, *Bloomberg*, 11 September 2012. <http://www.bloomberg.com/news/articles/2012-09-11/top-1-000-companies-wield-power-reserved-for-nations>
- 15 John Tennent and Graham Friend, *The Economist Guide to Business Modelling*, *The Economist*, Profile Books, 2011 edition.
- 16 Saul Kaplan, Business models aren’t just for business, *Harvard Business Review*, 19 April 2011. <https://hbr.org/2011/04/business-models-arent-just-for>
- 17 Project Breakthrough is a new online platform, launched in September 2016 in partnership by the United Nations Global Compact and Volans, which spotlights the best, most transformative examples of sustainable innovation in three areas: exponential mindsets, disruptive technologies and tomorrow’s business models. For more information, visit: <http://projectbreakthrough.io>
- 18 Richard Waters and Leslie Hook, FT Big Read: Tech Investment, *Financial Times*, 28 June 2016.
- 19 If digitization is the process of turning information into digital code, then digitalization is the process by which digital code and related models disrupt and transform one sector after another.
- 20 Harada Kazuyoshi, Convenience stores going to customers’ doors, *Nippon.com*, 10 December 2015. <http://www.nippon.com/en/in-depth/a04904>
- 21 Future-Fit Business Benchmark. <http://futurefitbusiness.org>
- 22 Mark Bonchek, How to create an exponential mindset, *Harvard Business Review*, July 27, 2016. <https://hbr.org/2016/07/how-to-create-an-exponential-mindset>
- 23 Tom Randall, Wind and solar are crushing fossil fuels, *Bloomberg*, 6 April 2016. <http://www.bloomberg.com/news/articles/2016-04-06/wind-and-solar-are-crushing-fossil-fuels>
- 24 Peter Diamandis, Scarcity vs. Abundance; Linear vs. Exponential Mindset, *Awaken*, 29 September 2014. <http://www.awaken.com/2014/09/scarcity-vs-abundance-linear-vs-exponential-mindset>
- 25 Tesla website. <https://www.tesla.com/gigafactory>
- 26 Thomas Schroder, Is Tesla crowdfunding the Model 3?, *The Atlanta 100*, 12 April 2016. <http://theatlanta100.com/living/2016/04/12/is-tesla-crowdfunding-the-model-3/11681>
- 27 Jonathan Stearns, Europe’s frustration with Cameron mounts at Ministerial meeting, *Bloomberg*, 24 June 2016. <http://www.bloomberg.com/news/articles/2016-06-24/europe-s-frustration-with-cameron-mounts-at-ministerial-meeting>
- 28 Sarah Lubman, Welcome to the new math, Mr Bezos, *Brunswick Review*, Issue 10, 2016. <https://www.brunswickgroup.com/publications/brunswick-review/boardroom-issue-10/adi-ignatius-measuring-leadership>
- 29 Adi Ignatius and Daniel McGinn, Novo Nordisk CEO Lars Sørensen on what propelled him to the top, *Harvard Business Review*, November 2015. <https://hbr.org/2015/11/novo-nordisk-ceo-on-what-propelled-him-to-the-top>
- 30 Lars Rebieen Sørensen, Fighting diabetes in the 21st century, *Harvard Business Review*, 29 December 2015. <https://hbr.org/2015/12/fighting-diabetes-in-the-21st-century>
- 31 Jonathan Moules, Solar lights a safer path for Tanzanians, *Financial Times*, 4 April 2016.
- 32 John Aglionby, Delivery drones take flight in Rwanda, *Financial Times*, 13 May 2016. <https://next.ft.com/content/478a82bc-192a-11e6-bb7d-ee563a5a1cc1>
- 33 Tom Agan, The secret to lean innovation is making learning a priority, *Harvard Business Review*, 23 January 2014. <https://hbr.org/2014/01/the-secret-to-lean-innovation-is-making-learning-a-priority>
- 34 Frugal Innovation Hub website. <http://frugalinnovationhub.com/en/about.html>
- 35 Ibid.



- 36 *The carbon productivity challenge: Curbing climate change and sustaining economic growth*, McKinsey Global Institute, June 2008.  
<http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/the-carbon-productivity-challenge>
- 37 Interface website.  
<http://www.interfaceglobal.com/sustainability/interface-story.aspx>
- 38 Interface website.  
<http://www.interface.com/US/en-US/campaign/negative-to-positive/climate-take-back>
- 39 Interest declared: Volans has worked for Covestro for some years and is advising the company on its emerging Carbon Productivity initiative.
- 40 Covestro website.  
<http://www.covestro.com/en/innovation/global-trends/population-growth>
- 41 Kristie Thong, Game-changing business models for green buildings, *Eco-Business*, 3 May 2016.  
<http://www.eco-business.com/news/game-changing-business-models-for-green-buildings>
- 42 Leena Rao, Alibaba eyes its next big opportunity: rural China. *Fortune*, 28 January 2016.  
<http://fortune.com/2016/01/28/alibabas-rural-china>
- 43 Rizwan Syed, DoctHERs in Pakistan empowering female doctors, *Al Jazeera*, 7 April 2016.  
<http://www.aljazeera.com/indepth/features/2016/03/docthers-pakistan-empowering-female-doctors-160328143049724.html>
- 44 Amos Winters and Vijay Govindarajan, Engineering reverse innovations, *Harvard Business Review*, July 2015.  
<https://hbr.org/2015/07/engineering-reverse-innovations>
- 45 A New Era of Sustainability—UN Global Compact-Accenture CEO Study 2010, UN Global Compact and Accenture, 2010.  
<https://www.unglobalcompact.org/library/230>
- 46 Sustainability Incorporated, SustainAbility, 2015.  
<http://www.sustainability.com/library/sustainability-incorporated>
- 47 Rick Tetzeli, 9 ways GE executed its radical green reinvention, *Fast CoExist*, 10 December 2015.  
<http://www.fastcoexist.com/3054441/9-ways-ge-executed-its-radical-green-reinvention>
- 48 Interview on McKinsey & Company blog, GE's Jeff Immelt on digitizing in the industry space, October 2015.  
<http://www.mckinsey.com/business-functions/organization/our-insights/ges-jeff-immelt-on-digitizing-in-the-industrial-space>
- 49 Interest declared: co-author John Elkington was the founding chair of the GRI Technology Consortium.
- 50 Grow Asia website.  
<http://growasia.org>
- 51 Provenance website.  
<https://www.provenance.org>
- 52 Nick Leiber, LaborLink help workers report sweatshop factory conditions, *Bloomberg*, 16 May 2013.  
<http://www.bloomberg.com/news/articles/2013-05-16/laborvoices-labor-link-help-workers-report-sweatshop-factory-conditions>
- 53 Kenneth E. Boulding, The economics of the coming spaceship earth, in H. Jarrett (ed.) 1966, *Environmental Quality in a Growing Economy*, pp.3–14. Baltimore, MD.  
[http://arachnid.biosci.utexas.edu/courses/thoc/readings/boulding\\_spaceshipearth.pdf](http://arachnid.biosci.utexas.edu/courses/thoc/readings/boulding_spaceshipearth.pdf)
- 54 James Greyson blog, How to celebrate the 50th birthday of the circular economy vision?, 8 March 2016.  
<http://blindspot.org.uk/50th-birthday-of-the-circular-economy-vision>
- 55 Decoupling Natural Resource Use and Environmental Impacts from Economic Growth, UNEP, 2011.  
[http://www.unep.org/resourcepanel/decoupling/files/pdf/decoupling\\_report\\_english.pdf](http://www.unep.org/resourcepanel/decoupling/files/pdf/decoupling_report_english.pdf)
- 56 Material Flows.net website.  
<http://www.materialflows.net/trends/analyses-1980-2011/global-resource-extraction-by-material-category-1980-2011>
- 57 James Greyson, How to celebrate the 50th birthday of the circular economy vision, *Blind Spot Think Tank blog*, 20 June 2016.  
<http://blindspot.org.uk/50th-birthday-of-the-circular-economy-vision>
- 58 Ellen MacArthur Foundation website.  
<https://www.ellenmacarthurfoundation.org/circular-economy/overview/concept>
- 59 Maxine Perella, 10 things you need to know about the sharing economy, *The Guardian*.  
<http://www.theguardian.com/sustainable-business/10-things-need-to-know-circular-economy>
- 60 *The New Plastics Economy*, Ellen MacArthur Foundation, 2016.  
<https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics>
- 61 *Young Global Leaders: Circular Economy Innovation & New Business Models Dialogue*, Position Paper, World Economic Forum, 2013.  
[http://www3.weforum.org/docs/wef\\_ygl\\_circulareconomyinnovation\\_positionpaper\\_2013.pdf](http://www3.weforum.org/docs/wef_ygl_circulareconomyinnovation_positionpaper_2013.pdf)
- 62 Ellen MacArthur Foundation website.  
<https://www.ellenmacarthurfoundation.org/case-studies/selling-light-as-a-service>
- 63 Thomas Fleming and Markus Zils, Toward a circular economy: Philips CEO Frans van Houten, *McKinsey Quarterly*, February 2014. <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/toward-a-circular-economy-philips-ceo-frans-van-houten>
- 64 John Gardner, Building a Circular Economy: How Ford, Novelis created a truly closed loop for automotive aluminium, *Sustainable Brands*, 28 May 2015.  
[http://www.sustainablebrands.com/news\\_and\\_views/next\\_economy/john\\_gardner/building\\_circular\\_economy\\_how\\_ford\\_novelis\\_created\\_truly\\_cl](http://www.sustainablebrands.com/news_and_views/next_economy/john_gardner/building_circular_economy_how_ford_novelis_created_truly_cl)
- 65 Project Meadowlark, Carbon Nation with Arizona State University for Shell Gamechangers, March 2016.
- 66 Cat Johnson, Sharing City Seoul: A model for the world, *Shareable*, 3 June 2014.  
<http://www.shareable.net/blog/sharing-city-seoul-a-model-for-the-world>
- 67 Otto Scharmer website.  
<http://www.ottoscharmer.com>
- 68 The X Prize Foundation website.  
<http://www.xprize.org/prizes>
- 69 Nesta website.  
<http://www.nesta.org.uk/challenge-prize-centre>

---

### 3 Other Volans Publications

- 1 **The Stretch Agenda**  
Volans  
2015
- 2 **The Breakthrough Forecast**  
Market Sweet Spots 2016 to 2025  
Volans  
2015
- 3 **Interface**  
The Untold Story of Mission Zero  
Volans and Interface  
2015
- 4 **Investing in Breakthrough**  
Corporate Venture Capital  
Volans with Global Corporate  
Venturing, the John D. and Catherine  
T. MacArthur Foundation and Social  
Investment Business  
2014
- 5 **The Breakthrough Challenge**  
10 Ways to Connect Today's Profits  
With Tomorrow's Bottom Line  
John Elkington and Jochen Zeitz  
Jossey-Bass/Wiley, San Francisco  
2014
- 6 **Breakthrough**  
Business Leaders,  
Market Revolutions  
Volans  
2013
- 7 **The Zeronauts**  
Breaking the Sustainability Barrier  
John Elkington  
Earthscan/Taylor & Francis, Oxford  
2012
- 8 **The Future Quotient**  
50 Stars in Seriously Long-Term  
Innovation  
Volans and JWT Ethos  
2011
- 9 **The Transparent Economy**  
Six Tigers Stalk the Global Recovery—  
and How to Tame Them  
Volans for the Global Reporting  
Initiative  
2010
- 10 **The Biosphere Economy**  
Natural Limits Can Spur Creativity,  
Innovation and Growth  
Volans (lead author Alejandro Litovsky),  
Tellus Mater Foundation and B4E  
2010
- 11 **The Phoenix Economy**  
50 Pioneers in the Business of  
Social Innovation  
Volans for the Skoll Foundation  
2009
- 12 **The Power of Unreasonable People**  
How Social Entrepreneurs Create  
Markets That Change the World  
John Elkington and Pamela Hartigan  
Harvard Business School Press,  
Cambridge, Massachusetts  
2008



## About the Business and Sustainable Development Commission

The Business and Sustainable Development Commission aims to accelerate market transformation and advance the world's transition to a more prosperous, inclusive economy. Our mission is to make a powerful case—supported by sound evidence, rigorous research and compelling real-world examples—for why the private sector should seize upon sustainable development as the greatest economic opportunity of a lifetime. Our flagship report, to be launched in January 2017 will show how the Sustainable Development Goals (SDGs)—17 objectives to end poverty, reduce inequality and tackle climate change and other urgent challenges by 2030—provide the private sector with the framework for achieving this market shift. The report will serve as the foundation for launching initiatives to inspire and mobilise businesses to achieve the SDGs.

[www.businesscommission.org](http://www.businesscommission.org)



## About Volans

Founded in 2008, Volans is a London-based transformation agency. We work with global companies, innovators, government actors and civil society to help them move beyond incremental change to address systemic challenges. We call this 'Breakthrough'. Our work is focused on stretching thinking, mindsets and behaviours through a mix of agenda-setting, advocacy and advisory projects.

[www.volans.com](http://www.volans.com)

[www.projectbreakthrough.io](http://www.projectbreakthrough.io)