SUSTAINABLE INNOVATION:

UNLOCKING OPPORTUNITIES TO MEET CHANGING CONSUMER PREFERENCES

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1. INTRODUCTION

Climate change is a pressing issue and many of us have already experienced its adverse effects first-hand. A 2022 survey by Deloitte covering 23 countries and 23,000 people found that nearly half of all respondents (49%) had experienced a climate-related event – drought, wildfire, extreme heat, severe storms etc. – in the past six months[1]. The impact is not only felt on the individual level but also on the corporate level. A second 2022 survey by Deloitte of more than 2,000 C-suite executives across the world found that 97% companies had already experienced negative effects from climate change. For the business community, the risks are real – be it from acute physical risks such as increased severity of extreme weather events leading to disrupted supply chains or damaged assets – to transitional risks such as failure to keep up with the changing regulatory, technological, or market landscapes. Recent research by the Deloitte Economics Institute modelled data from 15 geographies worldwide and estimated that the potential negative impact on the global economy could reach as high as US$ 178 trillion by 2071 if we are unable to prevent global temperatures from rising 3°C by the end of the century[2].

More and more companies are taking action to support the transition to a low-carbon economy and gain a competitive advantage by adapting to the changing business environment. For these companies, the potential opportunities are tremendous. By aligning corporate strategy with a low-carbon future, companies not only mitigate risks, but also position themselves to unlock new market opportunities.

In this paper, we explore one of these opportunities, namely changing consumer preferences as a result of growing awareness of climate-related issues. We explore how innovation through the lens of sustainability can help companies meet these changing demands and unlock opportunities while also supporting the transition to a low-carbon economy. We review the history of global

1 *Irena Pichola & Derek M. Pankratz, "The world is ready for climate action," Deloitte, September 2021, https://www2.deloitte.com/global/en/pages/public-sector/articles/the-world-is-ready-for-climate-action.html*
2 *Jennifer Steinmann & Prof. Dr. Bernhard Lorentz, "The Turning Point: A Global Summary" Deloitte, May 2022, https://www2.deloitte.com/content/dam/Deloitte/global/Documents/gx-global-turning-point-report.pdf*

efforts to combat climate change and the corresponding impact on the corporate sector. We also discuss the state of play today and provide recommendations for what companies can do to realise climate-related opportunities by innovating its products and services through the lens of sustainability. Lastly, we explore some of the cultural and geographical differences that multinational corporations should consider in regard to consumer preferences and awareness of climate-related issues.

1.1 METHODOLOGY

In the corporate context, *sustainability* is constantly evolving and covers topics relating to environmental, social, and governance (ESG) issues. In this paper, we will primarily focus on the 'environmental'-dimension of ESG to explore how companies can build a competitive advantage by adapting to changing consumer preferences while supporting the goals of the Paris Agreement to limit global warming from exceeding 1.5°C as compared to pre-industrial levels.

This paper is based on desktop research, internal analysis, as well as interviews with members of the European Chamber of Commerce, Singapore.

2. A HISTORY OF CLIMATE AMBITIONS

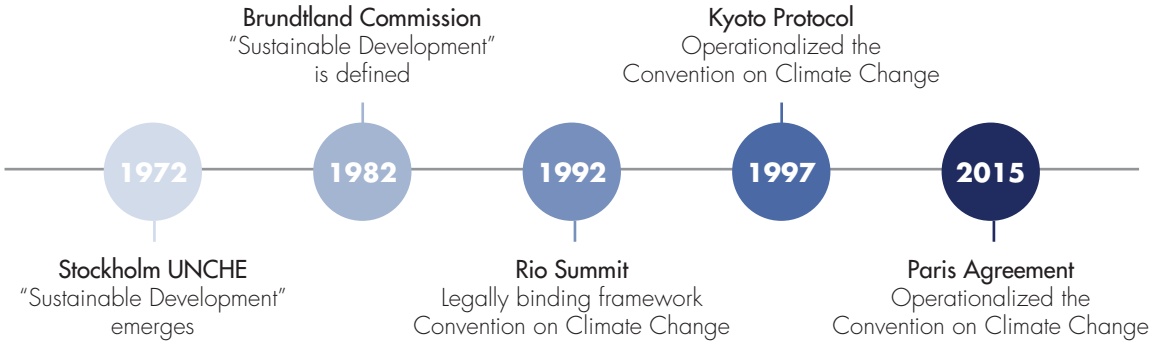

Figure 1: Key milestones in the global effort to combat adverse impacts of climate change.

To understand the current state of play with regard to corporate climate action, we must first understand some of the key milestones that led us here.

Although it may not seem like it, the global fight to combat climate change is not a recent one. The scientific literature on corporate environmental, social, and governance issues (ESG) goes back to the early 1900's, but Howard Bowen is by many considered the father of modern corporate responsibility, following his 1953 publication 'Social responsibility of the businessman', in which he coined the term 'Corporate Social Responsibility', or CSR. Bowen argued that the business community had an obligation to pursue policies and decisions that not only focused on maximisation of profits, but also considered the objectives and values of our broader society[3].

A decade later, in 1962, Rachel Carson published 'Silent Spring', a scientific book documenting the environmental harm caused by indiscriminate use of pesticides in the United States[4]. The book ignited widespread public concern in the United States and started a public revolution in environmental awareness that spread across the world. Silent Spring is considered by many the launching point for today's environmental movement and public awareness of environmental issues.

On the global political stage, climate action has been on the agenda for five decades. The 1972 United Nations Conference on the Environment in Stockholm became the first world conference to make the environment a major issue. At the conference, the participants placed environmental issues at the forefront of international concerns and marked the start of a dialogue between industrialised and developing countries on the link between economic growth, the pollution of the air, water, and oceans that is still continuing today[5].

3 Howard R. Bowen, "Social Responsibility of the Businessman", 2nd ed. (Iowa City: University of Iowa Press, 2013)
4 Cate Lineberry, "How Rachel Carson's 'Silent Spring' Awakened the World to Environmental Peril" History, April 2022, https://www.history.com/news/rachel-carson-silent-spring-impact-environmental-movement
5 United Nations, "Conference on the Human Environment" United Nation, June 1972, https://www.un.org/en/conferences/environment/stockholm1972#:~:text=The%20Stockholm%20Declaration%2C%20which%20contained,and%20the%20well%2Dbeing%20of

Another important milestone occurred in 1982 when the Brundtland Commission coined the term 'sustainable development' as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'[6]. This definition was widely adopted and provided a global common language for approaching the concept of sustainability. For the corporate sector, this was also an important definition for understanding the sustainability of its operations, products, and services.

Another decade went past, until the UN Rio Summit, also known as the Earth Summit, was hosted in 1992. The summit marked an important milestone for sustainability as it was where the United Nations Framework Convention on Climate Change was passed, a legally binding framework on climate change. The ultimate objective of the Convention was to stabilise greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic interference with the climate system"[7].

A few years later, in 1997, the Kyoto Protocol was adopted, which operationalised the United Nations Framework Convention on Climate Change by committing industrialised countries and economies to limit and reduce greenhouse gas emissions in accordance with agreed individual targets[8]. However, the protocol lacked binding commitments, accountability, and responsibility.

Then, in 2015, the Paris Agreement was adopted by 196 UN members at COP 21 in Paris. The Paris Agreement is a legally binding international treaty on climate change and its goal is to limit global warming to well below 2°C and pursuing efforts to limit it to 1.5°C, as compared to pre-industrial levels[9]. Member countries submit Nationally Determined Contributions, or NDC's, that communicate the actions they will take to reduce greenhouse gas emissions in order to reach the goals of the Paris Agreement. The adoption of the Paris Agreement has spurred much of the climate-action and momentum we are seeing from regulators, investors, and corporates today.

3. STATE OF PLAY

3.1 FALLING BEHIND

Despite five decades of global climate ambitions and an increasing momentum in recent years, the latest report published by the Intergovernmental Panel on Climate Change (IPCC) in 2022 shows that we are no longer running out of time – time's up[10]. At its current trajectory, the global temperature rise is expected to surpass the 1.5°C target - considered the upper limit to avoid the worst fallout from climate change. This, despite the nationally-determined contributions committed by the 196 signatories of the Paris Agreement. We must take collective and drastic action now to reduce atmospheric emissions from anthropogenic activities if we are to avoid the most catastrophic impacts of climate change and meet the goals of the Paris Agreement. While there is a strong emphasis and awareness of climate action in all domains of our society – from the public, to regulators, to capital markets, and corporates – we must pivot from awareness to action.

According to the 2022 Global Risk Report published by the World Economic Forum, environmental risks including "climate action failure", "extreme weather", and "biodiversity loss", were ranked as the top three most severe risks on a global scale over the next ten years[11].

This is supported by recent research by the Deloitte Economics Institute, which modelled region-level data from 15 geographies across Asia Pacific, Europe, and the Americas, to estimate the potential impact on the global economy if climate change goes un-

6 *United Nations, "Report of the World Commission on Environment and Development: Our Common Future" United Nation, May 1986, https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf*
7 *United Nations, "Conference on Environment and Development, Rio de Janeiro, Brazil" United Nation, June 1992, https://www.un.org/en/conferences/environment/rio1992*
8 *United Nation Climate Change, "What is the Kyoto Protocol?" UNFCCC, December 1997, https://unfccc.int/kyoto_protocol*
9 *United Nation Climate Change, "The Paris Agreement – What is the Paris Agreement?" UNFCCC, December 2015 https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement*
10 *IPCC, "IPCC Sixth Assessment Report – Impact, Adaptation and Vulnerability" IPCC, February 28 https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf*
11 *Emilio Granados Franco, Melinda Kuritzky & Saadia Zahidi, "The Global Risk Report 2022 – 17th Edition" World Economic Forum, 2022, https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf*

checked. The results showed a potential negative impact on the global economy as high as US$ 178 trillion between 2021-2071. Of all regions, the Asia Pacific economy was expected to be the most vulnerable and adversely impacted by climate change. The human costs would be far greater: a lack of food and water, loss of jobs, worsening health and well-being, and reduced standard of living[12].

If, on the other hand, the world acts now to rapidly achieve net-zero emissions by mid-century, the transformation of the economy could set the world up for strong economic growth, according to the same analysis. Such a transformation could increase the size of the world economy by as much as US$ 43 trillion in net present value by 2070.

The corporate sector is a significant contributor to our warming planet with one study suggesting that a mere 100 companies are responsible for 71% of all industrial greenhouse gas emissions since 1988[13]. The private sector therefore plays a crucial role in achieving the increasingly difficult task of limiting global warming to avoid the most catastrophic impacts of climate change.

3.2 THE GOOD NEWS - THERE ARE SUBSTANTIAL CLIMATE-RELATED OPPORTUNITIES FOR COMPANIES WHICH TAKE ACTION

While climate change poses daunting challenges and risks, there are also tremendous opportunities presented to the private sector relating to climate action.

Resource efficiency, resilience, expanding markets for low carbon products and services, new technologies, public sector incentives, and ability to raise capital are just some of the climate-related opportunities companies are starting to capitalise on. Recent research by CDP, a global corporate environmental disclosure platform, analysed the environmental disclosures by nearly 4,000 companies in Asia Pacific in 2021, representing 14% of global market capitalisation[14]. The research found that more than half of companies (55%) had already identified climate-related opportunities with the potential to have a significant strategic or financial impact on their business. The majority of reported opportunities were related to products and services, such as development and/or expansion of low emissions goods and services, as well as development of new products or services through R&D. This finding is supported by more than 2,000 C-suite executives surveyed by Deloitte in 2022, who quoted the top benefits from their sustainability efforts as being enhanced brand recognition and reputation, followed by customer satisfaction (e.g., meeting customer expectations)[15].

Changing consumer preferences are driving climate-related market opportunities, and companies which are not already doing so, should take action to unlock these opportunities, strengthen their competitive advantage, and avoid falling behind the curve.

4. INNOVATING THROUGH THE LENS OF SUSTAINABILITY TO MEET CHANGING CONSUMER PREFERENCES

In the following section, we explore how consumer preferences are changing with regard to climate-related issues and sustainability, and steps companies can take to create opportunities from these changes while improving environmental performance.

A 2022 survey by Deloitte examining consumer attitudes and behaviours around sustainability found that consumers are increasingly making conscious decisions with sustainability and the environment in mind[16]. The survey found that 38% of respondents reported having paid extra for more durable and longer-lasting products. This is supported by a 2020 study by the Capgemini Research Institute,

12 *Irena Pichola & Derek M. Pankratz, "The world is ready for climate action" Deloitte, September 2021, https://www2.deloitte.com/global/en/pages/public-sector/articles/the-world-is-ready-for-climate-action.html*
13 *Dr. Paul Griffin, "The Carbon Majors Database – CDP Carbon Majors Report 2017" CDP, July 2017, https://cdn.cdp.net/cdp-production/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf?1501833772*
14 *CDP, "Rising to the Challenge: How companies in Asia Pacific are Preparing for the Net-Zero Economy" CDP, March 2022, https://cdn.cdp.net/cdp-production/cms/reports/documents/000/006/179/original/How_companies_in_Asia_Pacific_are_preparing_for_the_net-zero_economy_EN.pdf?1650445441, 2022*
15 *Jennifer Steinmann & Derek Pankratz, "Deloitte 2022 CxO Sustainability Report – The disconnect between ambition and impact" Deloitte, 2022 https://www2.deloitte.com/content/dam/Deloitte/global/Documents/2022-deloitte-global-cxo-sustainability-report.pdf*
16 *Tim Archer, Emily Cromwell & Céline Fenech, "How consumers are embracing sustainability – Adoption of sustainable lifestyles is on the rise, but consumers need more help" Deloitte, 2022, https://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html,*

which surveyed over 7,500 consumers worldwide and found that 79% of respondents signalled changing consumer preferences based on sustainability. 42% of the respondents reported having already changed their purchasing behaviour based on sustainability, and an additional 37% were planning to do so[17].

4.1 WHY ARE CONSUMER PREFERENCES CHANGING?

4.1.1 Increased awareness

Global research by Pew Research Center in 2019 showed that concerns about climate change have risen significantly in many countries over the past few years. It found that respondents across 23 countries who considered climate change to be a major threat had increased from 56% in 2013 to 67% in 2019[18]. Further research in 2021 found that 72% of respondents across 17 countries expressed concern that they would be personally harmed by climate change in their lifetimes[19].

This stark new reality is driving more and more consumers to take action and make more conscious purchasing decisions. A 2021 survey by the European Commission found that 96% of Europeans have taken at least one action to tackle climate change, including reconsidering their purchasing decisions[20]. For example, nearly half (42%) of the surveyed respondents listed lower energy consumption as an important factor when buying a new household appliance (e.g., washing machine or TV), and a third of respondents reported buying and eating more organic food (32%), as well as buying and eating less meat (31%). Findings like these suggest that the changing consumer behaviour is widespread and likely to be felt across all sectors and industries.

4.1.2 Covid-19 Pandemic

While consumer awareness of climate-related issues has been growing steadily for years, the Covid-19 pandemic accelerated its pace. The past few years have shown the interdependency of human and natural systems, how fragile they can be, and how rapidly risks can emerge and evolve.

Among 7,500 consumers surveyed worldwide, 67% reported that they would be more cautious about the scarcity of natural resources due to the COVID-19 crisis, and 65% indicated that they would be more mindful about the impact of their overall consumption in the "new normal"[21]. This is supported by a 2021 study by the IBM Institute for Business Value (IBV), which found that nearly all (93%) of 14,000 global consumers reported that the pandemic had influenced their views on sustainability[22]. Most respondents now considered sustainability to be very, or extremely, important. A continuation of this trend was indicated in a similar survey conducted by IBV in 2022, where more than half (51%) of 16,000 global consumers reported that environmental sustainability was more important to them today than it was 12 months ago[23]. The study also found that consumers' actions are increasingly starting to match their intent.

The Covid-19 pandemic has had devastating impacts on all aspects of our societies – the business community included. The World Bank estimated that one in every four companies globally saw their sales drop by as much as 50% between October 2020 and January 2021[24].

The dramatic impacts of the Covid-19 pandemic on business and consumer behaviour may present a silver lining for companies around the world to "build back better" and adapt their products and services to be more sustainable and align with changing consumer preferences. Creating new products or services or adapting existing ones to be more environmentally friendly makes sound business sense: It can help retain and attract new customers and employees alike; reduce material costs and increase efficiency across the value chain; as well as mitigating risks such as increased stakeholder concern, reputational damage, or increased costs of raw materials.

17 *Kees Jacobs, et. al, "Consumer Products and Retail – How Sustainability is Fundamentally Changing Consumer Preferences" Capgemini Research Institute, 2022, https://www.capgemini.com/wp-content/uploads/2021/02/20-06_9880_Sustainability-in-CPR_Final_Web-1-2.pdf*
18 *Moira Fagan & Christine Huang. "A look at how people around the world view climate change" Pew Research Centre, April 2019, https://www.pewresearch.org/fact-tank/2019/04/18/a-look-at-how-people-around-the-world-view-climate-change/*
19 *James Bell, Jacob Poushter, Moira Fagan & Christine Huang, "In Response to Climate Change, Citizens in Advanced Economies are Willing to Alter How They Live and Work" Pew Research Centre, September 2021, https://www.pewresearch.org/global/2021/09/14/in-response-to-climate-change-citizens-in-advanced-economies-are-willing-to-alter-how-they-live-and-work/*
20 *European Commission, "Citizen Support for Climate Action" European Commission, 2021, https://ec.europa.eu/clima/citizens/citizen-support-climate-action_en*
21 *Kees Jacobs, et. al., "Consumer Products and Retail – How Sustainability is Fundamentally Changing Consumer Preferences" Capgemini Research Institute, 2020, https://www.capgemini.com/wp-content/uploads/2021/02/20-06_9880_Sustainability-in-CPR_Final_Web-1-2.pdf*
22 *IBM Institute for Business Value, "Sustainability at a turning point – Consumers are pushing companies to pivot" IBMIBV, May 2021, https://www.ibm.com/downloads/cas/WVJ7LVP4*
23 *Jane Cheung, et. al., "Balancing sustainability and profitability" IBMIBV, April 2022, https://www.ibm.com/downloads/cas/5NGR8ZW2*
24 *The World Bank, "Tracking an Unprecedented Year for Businesses, Everywhere" The World Bank, February 2021, https://www.worldbank.org/en/news/feature/2021/02/17/tracking-an-unprecedented-year-for-businesses-everywhere*

4.1.3 Increased transparency

Companies are facing increased scrutiny of their ESG performance and there is nowhere to hide in the digital age. In the past, companies created products for consumers who often had little to no knowledge of how the business operated or how its products were manufactured. Today, companies are expected to disclose their ESG impact and performance to a wide range of stakeholders - from customers and local communities to employees and interest groups.

However, the most significant driving forces in recent years for environmental transparency come from regulators and investors who are increasingly integrating ESG factors and assessments into their investment decision making. Recent research by Deloitte found that, at their current growth rate, ESG-mandated assets are on track to represent half of all professionally managed assets globally by 2024[25]. Governments and regulators around the world have mandated ESG disclosures through channels such as annual sustainability reports, and additional mandates on climate-related financial disclosures are also becoming increasingly normal. For example, in 2022 the Singapore Stock Exchange, who already require its listed companies to produce annual sustainability report, initiated a 3-year phased approach to introduce additional mandated climate-related disclosures based on the Task force on Climate-related Financial Disclosures (TCFD)[26]. Combined, these driving forces have led to high expectations and demand for comprehensive disclosures and transparency, especially from publicly listed companies, on environmental, social, and governance issues.

4.1.4 Changing demographics

As we have seen, consumers are increasingly prioritising sustainability-factors in their purchasing behaviour and are willing to pay more for 'green products'. The changing global demographics is a key reason for this.

There are currently four consumption cohorts, or generations, active in today's consumer culture[27]:

- Baby Boomers (born 1946-1964)
- Generation X (born 1965-1981)
- Generation Y, or Millennials (born 1982-1997)
- Generation Z (born 1998 – present day)

As millennials and generation Z entered the consumer culture, a noticeable increased preference toward sustainable products and services emerged. Deloitte's global 2019 Millennial Survey found that 42% of millennials reported having purchased a company's products or services due to its perceived positive impact on society or the environment[28]. Furthermore, according to the latest Global 2022 Gen Z and Millennial Survey by Deloitte, protecting the environment remains a top priority for the younger demographics. About three quarters of respondents believed the world is at a tipping point in responding to climate change, but less than half are optimistic that efforts to protect the planet will be successful. Despite this pessimistic view, the vast majority of generation Z and millennials (90%) are making at least some effort to reduce their own impact on the environment, and many are willing to pay more to make sustainable choices. According to the survey, 64% of generation Z reported that they would pay more for an environmentally sustainable product[29].

The rise of the millennial and generation Z cohorts are being felt differently across the world, something multinational companies must consider when adapting its products and services to meet changing consumer preferences. According to the World Economic Forum, 1.8 billion people, or 23% of the global population, are now from the millennial cohort. The Asia Pacific region is unmatched when it comes to millennials, with 46% residing in the region. This is more than double as compared to Europe, where millennials make up only 20% of the population[30]. According to the Asian Development Bank, millennials and generation Z are

25 *Tania Lynn Taylor & Sean Collins, "Ingraining sustainability in the next era of ESG investing" Deloitte, April 2022, https://www2.deloitte.com/us/en/insights/industry/financial-services/esg-investing-and-sustainability.html*
26 *SGX, "Sustainability Reporting" SGX, 2022, https://www.sgx.com/regulation/sustainability-reporting*
27 *Adrea Niosi, "Introduction to Consumer Behaviour" BCcampus, 2021, 251, https://opentextbc.ca/introconsumerbehaviour*
28 *Michele Parmelee, "A generation disrupted" Deloitte, May 2019, https://www2.deloitte.com/us/en/insights/topics/talent/deloitte-millennial-survey-2019.html*
29 *Deloitte, "The Deloitte Global 2022 Gen Z and Millennial Survey" Deloitte, 2022, https://www2.deloitte.com/content/dam/Deloitte/global/Documents/deloitte-2022-genz-millennial-survey.pdf*
30 *Dorothy Neufeld, "There are 1.8 billion millennials on earth. Here's where they live" World Economic Forum, November 2021, https://www.weforum.org/agenda/2021/11/millennials-world-regional-breakdown/*

projected to make up as much as 75% of the Association of Southeast Asian Nations (ASEAN) consumers by 2030[31]. The same report also estimates that the Asia Pacific region will make up 43% of global consumer spending (US$32.9 trillion) by the same year.

These growing regional differences will be an increasingly important factor for multinational corporations to consider, when engaging markets in Asia and Europe and adapting its products and services to meet changing consumer preferences. For companies which get it right, the market opportunities are immense.

4.2 INNOVATING THROUGH THE LENS OF SUSTAINABILITY TO MEET CHANGING CONSUMER PREFERENCES

4.2.1 What is innovation?

Innovation is not 'anything new'. Innovation in business is when companies introduce new processes, services, or products, to affect positive change in their business[32]. This can include improving existing methods or practices or starting from scratch. Ultimately the goal is to reinvigorate a business, creating new value and boosting growth and/or productivity.

4.2.2 Sustainable innovation

Traditional innovation originates from a business environment that paid less attention to the concept of sustainability, and where profits were the sole focus[33]. Innovation is fundamental to how companies can develop products and services that meet changing consumer needs. If we want an innovation point that comes from improved environmental performance, we must change the way we approach innovation and inject sustainability measures into the innovation process. For sustainability to reach its full potential, it should be integrated throughout the product life cycle.

As more and more companies adapt to capitalise on the growing opportunities relating to climate-related issues, sustainability is assuming greater relevancy in the context of innovation. Differentiation of products and services will play a greater role in shaping a company's prospects in the market, and increasingly, that differentiation will be the product of sustainability-driven innovation[34].

In many cases, sustainability can be a game changer. Sustainability can drive innovation by introducing new design constraints that shape how key resources— e.g., energy, carbon, water, materials and waste—are used in products and processes. It can also suggest areas where innovation can pay off especially well. These five resources are ubiquitous throughout an organisation's supply chain, and the potential to boost efficiency and cut costs across these resources is significant.

Examples of areas where sustainability can be considered in strategy to support product innovation:

- **Raw materials:** How are environmental issues affecting raw goods and vice versa? Are non-renewable resources being depleted too quickly and are there alternatives to substitute or reduce its usage? Are we working with suppliers who are addressing similar ESG concerns?
- **Energy consumption and cost:** Can we use energy more efficiently while still maintaining or increasing production?
- **Waste:** Waste equals wasted profits and greater environmental impact. How can we reduce the amount of materials we waste in our processes? How will new taxes on packaging or waste disposal affect our business?
- **Water availability and quality:** How might increasing water scarcity affect our manufacturing process and revenue continuity? Will we have to rethink production as we face stricter regulations?
- **Demand for sustainable products:** What do consumers want? How much are they willing to pay for "greener" products and services?

31 *Asian Development Bank, "Key indicators for Asia and the Pacific", 41st ed. (Mandaluyong City, Philippines: Asian Development Bank, 2010), 3-57, https://www.adb.org/sites/default/files/publication/27726/ki2010-special-chapter.pdf*
32 *Indeed Editorial Team, "What is business innovation?" Indeed, January 2022, https://uk.indeed.com/career-advice/career-development/business-innovation#:~:text=Business%20innovation%20is%20the%20process%20of%20introducing%20new,internally%2C%20for%20example%2C%20to%20increase%20that%20company%27s%20revenue.*
33 *Chris Sherwin, "Five Ways Sustainable Innovation is Different from Normal Innovation" Innovation Management, 2017, https://innovationmanagement.se/2017/04/18/five-ways-sustainable-innovation-is-different-from-normal-innovation/*
34 *Peter Capozucca, "Sustainability 2.0 – Using sustainability to drive business innovation and growth" Deloitte, January 20212, https://www2.deloitte.com/us/en/insights/deloitte-review/issue-10/sustainability-2-0-innovation-and-growth-through-sustainability.html*

Sustainability-driven innovation goes beyond designing green products and packaging solely on their inherent virtue. It entails improving business operations and processes to become more efficient, with a goal of reducing costs and waste. It is also about insulating a business from the risk of resource price shocks, shortages, disrupted supply chains, and so forth. Taken together these enhancements can deliver business benefits that go far beyond the bottom line—whether it's improving your overall carbon footprint, enhancing your brand image, or engaging both your customers and employees in a more profound way.

Many organisations focus their sustainability efforts on internal operations to cut costs, but this alone may not address one of the most significant savings opportunities: the supply chain. While many organisations recognise they could save money by asking suppliers to cut their operational costs, many leaders are going a step further to realise even more savings, closely examining their supply chain from end to end to reduce inefficiencies and identify areas for collaboration and improvements.

Suppliers that use too much energy, water, or materials, or produce more waste and carbon than necessary, are spending too much and passing those costs along. Initiatives to reduce energy, water, materials, and waste, typically have rapid payback periods and may be among the lowest risk projects an organisation can undertake[35]. Some leading procurers are now demanding environmental targets, such as waste or emissions reductions targets, from their key suppliers.

Figure 2 below illustrates some ways companies can approach sustainability and innovation throughout the product life cycle[36].

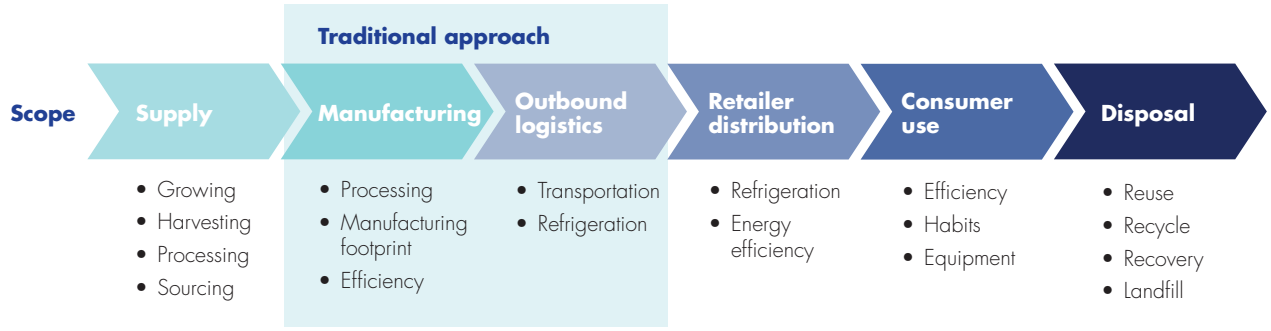

Figure 2: Product life cycle approach to sustainability (Source A.T. Kearney Analysis)

5. CASE STUDY EXAMPLES

In the following section, we explore how some members of the European Chamber of Commerce, Singapore from different industries are innovating through the lens of sustainability to adapt to changing consumer preferences and maintain its competitive advantage. The case studies were developed through desktop research of publicly available information, as well as interviews with the companies.

5.1. THE LEGO GROUP

The LEGO Group is a privately held company based in Billund, Denmark. Since it was founded nearly a century ago in 1932, the LEGO Group has grown to be become one of the worlds' leading manufacturers of play materials. Their mission is to 'inspire and develop the builders of tomorrow'.

The LEGO Group knows that children want them to be more sustainable. The company is therefore working hard to play its part in building a sustainable future and creating a better world for children to inherit. Children often write to the LEGO Group asking about their sustainability progress and share their inspiring ideas.

35 *Peter Capozucca, "Sustainability 2.0 – Using sustainability to drive business innovation and growth" Deloitte, January 20212, https://www2.deloitte.com/us/en/insights/deloitte-review/issue-10/sustainability-2-0-innovation-and-growth-through-sustainability.html*
36 *Ibid*

To meet the expectations of customers and fans all over the world, the company is continuously exploring ways to make its business and products more sustainable and more circular. This impacts all stages of the product life cycle, from design to materials and packaging, to end of life use.

In December 2020, the LEGO Group became the first large toy company to announce a science-based target, committing the company to reduce its absolute carbon emissions by 37% by 2032 compared to a 2019 baseline. To achieve this target, the LEGO Group is investing in improving carbon efficiency throughout its operations and expand renewable energy production at factories. In 2021, the company installed a total of 20,682 new solar panels at factories in China, Hungary and Mexico.

The company is investing in sustainable materials, as well as research and development, to reduce the carbon footprint of LEGO products and packaging. Importantly, the company is also engaging with its suppliers through its 'Engage-to-Reduce programme' which aims to drive innovative ways to reduce carbon footprint in the value chain.

Packaging

Much of LEGO's packaging is made from paper and cardboard which, on a global level, is more likely to be recycled than other materials. Some of the company's product still contains single-use plastic packaging, which LEGO is aiming to remove entirely by 2025. For example, the company has begun the process of switching from single-use plastic bags to paper-based bags in its LEGO® boxes and over the next few years you might find a mix of plastic and paper-based bags instead.

Sustainable materials

In 2018, the company started producing LEGO® elements from bio-polyethylene (bio-PE) – a soft, durable and flexible plastic derived from sustainably sourced sugarcane. At the time of writing, more than 150 of LEGO® elements, mainly botanical elements and Minifigure accessories, come from bio-PE. Around 50% of new sets now contain at least one of these elements. In June 2021, the company revealed its first prototype LEGO® brick made from a recycled material: recycled PET from discarded drinks bottles.

More than 150 dedicated LEGO employees have been hard at work, testing over 250 variations of PET materials and hundreds of other plastic alternatives, to develop a prototype that meets strict quality and safety requirements. The prototype brick is promising with similar durability and safety qualities but is expected to remain in testing for at least another year before the company will assess whether to move into pilot or trial production. The company's ambition is to make LEGO bricks from more sustainable materials by 2030, without compromising quality or safety.

End of use life

One of the company's major challenges in adopting entirely new materials is ensuring they are sufficiently safe and strong to be passed down through generations. The company is experimenting with materials that can be moulded to an accuracy that ensures new LEGO® bricks produced today fit with those made over 60 years ago, while being durable and safe enough to be handled by children.

LEGO® bricks are known for being durable and of such quality that they are safely passed from one generation to the next instead of becoming waste. LEGO Group is striving to ensure this tradition is kept while adopting more sustainable raw materials for production.

5.2 BMW GROUP

BMW was founded in 1916 as an engine manufacturer. In 1923, the company announced its first motorcycle, and in 1951, BMW's first post-war automobile was built. Today, the BMW Group, which includes the BMW, MINI, Rolls-Royce, and BMW Motorrad brands, has a production network comprising over 30 production sites worldwide, with a global sales network in more than 140 countries. The BMW Group considers sustainability a guiding principle for all actions and is an integral part of the company's strategy. By 2030, at least one in every two cars sold by the BMW Group will be fully electric. In particular, the MINI and Rolls-Royce Motor Cars brands will only offer fully electric vehicles (EVs) from the early 2030s.

The BMW Group is keenly aware of the growing focus on sustainability among its consumers. A survey conducted by the BMW Group in Singapore, Indonesia, Malaysia, and Thailand in 2022 revealed that 78% of drivers in Southeast Asia believe an increase in EVs on the road will contribute to a more desirable and environmentally conscious world. For 65% of respondents, a key benefit of EVs was the overall reduction in their carbon footprint, tying back to the overall desire of drivers in Southeast Asia to go greener in their motoring. The BMW Group noted that while EV adoption is increasing across Asia Pacific as a whole, each market is doing so at a different pace.

According to figures from the Land Transport Authority in Singapore, registrations of electrified BMW vehicles more than doubled its monthly sales across January to March 2022, compared to the same period last year[37]. Worldwide, the BMW Group sold a total of 75,890 fully-electric vehicles in the first half of 2022 – more than doubling its all-electric sales compared to the same period last year.

With the ever-increasing demand from consumers for EVs, the BMW Group is further accelerating its model offensive and is expecting to release around 10 million fully-electric vehicles onto the roads in the coming decade.

The company highlights that sustainable innovation will play a key role in meeting its sustainability targets, and that a comprehensive approach to sustainability, from raw materials to recycling, is essential for achieving significant emissions reductions. As a result, the company is considering all stages of their product lifecycle and operations to identify new opportunities.

In the design stage, for example, "Design for Recycling" is applied as a guiding principle to ensure that reusability is considered from the very start. In production, the BMW Group is continuously looking for ways to increase the use of recycled and renewable raw materials. On average, 30% of BMW Group vehicles are now made from recycled and reused materials, and the company has set a target to increase this to 50%. Similarly, 20% of all plastics used in BMW Group vehicles are now from recycled materials, and certain components, like underside panelling, are made from 100% recycled plastics, including old fishing nets.

From 2023, the BMW Group plans to launch its first vehicles featuring completely vegan interiors for BMW and MINI models. This is made possible primarily through the development of innovative materials with leather-like properties, whilst maintaining the premium appearance and feel together with wear resistance. These leather-free surfaces offer the possibility to increase CO2 savings along the value chain by around 85% compared to traditional leather options.

The BMW Group also expects its suppliers to be involved in minimising the overall environmental footprint. CO2 savings in the supply chain are becoming enormously important as e-mobility ramps up and the BMW Group aims to reduce CO2 emissions in its supply chain by 20% by 2030, compared to a 2019 baseline. To achieve this, among other initiatives, the BMW Group will shift to CO2-reduced steel starting 2025. With this, the company will avoid fossil fuels such as coal and only use steel that is produced using natural gas, hydrogen, and renewable electricity. This initiative alone is expected to reduce CO2 emissions from steel production as much as 95% - equivalent to 400,000 tonnes per year.

Overall, the BMW Group aims reduce its CO2 emissions by 40% per vehicle by 2030 across its entire value chain from a 2019 baseline.

The BMW Group's holistic approach to sustainability demonstrates the multitude of climate-related opportunities available throughout the product lifecycle, for companies that innovate its products and services through the lens of sustainability.

5.3 BNP PARIBAS

BNP Paribas is one of Europe's leading providers of banking and financial services. It operates in 68 countries and has more than 193,000 employees supporting its customers – individuals, associations, entrepreneurs, SMEs and institutions – through financing, investment, savings, and protection solutions.

As the bank for a changing world, BNP Paribas recognises how the impacts of climate change is changing social and consumer expectations and transforming the global business environment.

37 *https://www.straitstimes.com/singapore/transport/ev-brands-close-in-on-tesla-as-interest-in-electric-cars-grows*

As a global organisation, the bank must consider regional, cultural, social, and economic differences across markets. When assessing European and Asian markets, the bank noted that awareness of climate-related issues and ESG trends are currently predominantly led by Europe and that a gap of several years – among consumers, financing, and corporate trends – exists in Asia Pacific. This is being driven by several reasons. For example, in Southeast Asia, a diverse region with countries in different stages of economic growth, several markets are still in a phase where consumers are only just getting access to sustainably sourced materials and other 'green' products. Nevertheless, the bank expects this trend to change in the next decade and expects that markets in Asia Pacific will reach the same level of consumer behaviour and awareness as currently observed in Europe.

In relation to climate-related issues and broader ESG matters, BNP Paribas noted that Asia is currently going through a transitional phase and that consumers are taking an increasingly holistic view on corporate sustainability issues and focusing on the product life cycle. Consumers in the region are not only looking at a company's direct operations, but its entire value chain (up and downstream). This trend is driven by millennials and generation Z and the bank expects the next two decades to see a push for organisations to 'green' their supply chains. BNP Paribas encourages companies to look for ways to improve manufacturing and sourcing techniques, as well as engaging their up and downstream suppliers to do the same.

BNP Paribas supports this value chain evolution through capex (investment spending) and project financing. In order to align with the changing demands of the end, BNP Paribas supports corporate clients in their transition from various shades of brown to green, by having a greater emphasis on sustainability solutions in its products and services.

For example, amid growing voluntary emissions reduction markets, the bank identified several new solutions to support these markets through supply chain financing that range from loans and bonds to transaction banking services, which includes supply chain financing and various carbon solutions. BNP Paribas also works with hard-to-abate sectors to support their decarbonisation roadmaps through financing and supports their transition to a low-carbon future.

6. RECOMMENDATIONS – STEPS YOU CAN TAKE AS AN ORGANISATION

As we have found, consumers across the world are increasingly adopting a more sustainable lifestyle and this is impacting their purchasing behaviour. Below are some steps a company can take to unlock these opportunities by innovating through the lens of sustainability:

- **Consider the product lifecycle:** As we have seen throughout this paper and case studies, there are opportunities for sustainability innovation at all stages of a product's life cycle. By identifying low-hanging fruits to improve environmental performance at various stages, companies can achieve significant improvements on aggregate. The benefits go beyond simply improving environmental performance, but also improving resource efficiency, cutting cost, and mitigating risks.

- **Learn from your peers:** There are countless companies across all industries and geographies with efforts in place to innovate through the lens of sustainability. Many of these companies produce sustainability reports and other public ESG disclosures detailing their ongoing sustainability efforts. These are excellent resources for companies to leverage insights from peers and identify opportunities for improvements.

- **Engage your value chain:** As we have seen, companies should take a holistic approach to innovation and consider the full product life cycle in the context of sustainability. For most industries, the majority of emissions are indirect and can be found in the value chain. Engage your suppliers to communicate your sustainability ambitions and expectations, as well as to identify areas for collaboration and improvements.

- **Collaborate with your stakeholders:** In addition to learning from your peers and engaging your suppliers, also consider active partnerships with these - and other- stakeholders. By joining forces and collaborating on initiatives to minimize environmental impacts, you may find synergies and opportunities to leverage other's established initiatives, networks, insights, etc. Through stakeholder engagement, you can also proactively work with your customers to prepare for changing consumer preferences – rather than reacting to them.

- **Continually innovate:** Sustainability standards and opportunities are constantly evolving, and companies should continually invest in research and development to identify new opportunities and avoid falling behind the curve.

- **Get senior management/board buy-in:** Top-down support is essential for the effective implementation of sustainability-initiatives. Before commencing a project, ensure that the Board and/or senior management level is supportive of your plans – this will reduce the likelihood of encountering barriers and roadblocks later on.

- **Communicate your efforts:** A 2021 survey by Deloitte on consumer attitudes and behaviours around sustainability identified availability of information as a key barrier for consumers to adopt a more sustainable lifestyle. Nearly half (48%) of the respondent reported not having adopted a more sustainable lifestyle due to lack of information[38]. These findings point to the importance of giving consumers greater access to information about your efforts, products, and services - a low hanging fruit for most companies. Ensuring transparent and proactive communication of your sustainability efforts is key. However, be careful to avoid greenwashing your communications as it can cause significant reputational backlash, and potential legal consequences. Consult all relevant teams (e.g., Communications, Sustainability, R&D) before any sustainability-claims are made.

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38 *Tim Archer & Céline Fenech, "How consumers are embracing sustainability" Deloitte, 2022, https://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html,*