CPHI Online

Sustainability Report 2024: a Guide to Growing a Greener Industry

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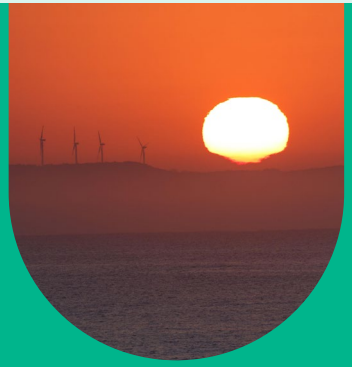
Introduction

The 2024 CPHI Sustainability Report explores sustainable initiatives, innovation and the biggest challenges facing the pharmaceutical industry, laying the groundwork for understanding the impact of the pharma industry on climate change and the communities it serves. It asks the question – how can we bring about actionable change for our industry in 2024 and beyond?

By drawing on insight from experts from across the supply chain, the goal of this report is to develop understanding and ignite action, bringing more in-depth critique to certain aspects of the field and helping to ideate solutions for pharma companies as they map out a greener future.



Chapter one: What did we learn from 2023 and where are we now?

A challenge we have with sustainability is showing measurable change. This chapter covers some of the key topics discussed in the 2023 Sustainability Report, from Scope 1, 2, and 3 emissions, to waste reduction and the role of technology throughout the supply chain. We quantify the emissions from the industry and determine whether those involved are on track to meet their sustainable targets.

Chapter two: Wrangling with regulation

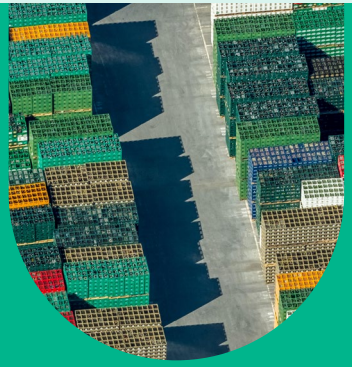
Regulation surrounding sustainable actions is not a new concept across global industries, however it seems to be for Pharma. Due to the nature of the field, human health and safety are always the priority, as it should be, which has led to hesitancy to change how some things in the industry are dealt with as it would mean repeating more rounds of rigorous testing. The call now is to push on with these changes as people come to realise that sustainability is intrinsically linked to human health. This chapter covers incoming legislation, and the collaborative action required - that which cannot be tackled just be individual pharmaceutical conglomerates.

Chapter three: Investing in sustainability

Sustainability is a priority for many companies now, but the shifts at the core of the business to achieve growth in this area need to be invested in to be successful, and to keep companies as field leaders. This chapter covers why it's important for companies to invest in sustainability, in all aspects of their business, and how best to do this.

Chapter four: What can emerging markets bring to the sustainability table?

Emerging markets in pharmaceuticals are hotbeds for innovation and growth in the industry, pushing the boundaries in several aspects. This chapter delves into how markets in The Middle East, India, and China are working towards sustainable goals.



Chapter five: We're all living in a material world

Materiality - the sourcing and developing of sustainable materials that can be used across the entire industry, to reduce waste, energy consumption, emissions, and ultimately reduce climate change. This chapter focuses on plastic use and chemistry applications across pharmaceuticals and healthcare, presenting solutions and alternatives that can be incorporated into regular processes in a more immediate timeframe.

Chapter six: Collaborative action through partnerships

Partnerships and collaborations are the key to success in creating a greener future. This doesn't just mean with other industry leaders who are already paving the way and setting big goals. Partnerships on a more cellular level within pharma businesses, the suppliers, contractors, manufacturers, distributors, all players involved in the value chain must contribute to sustainable standards. This chapter offers advice on how to facilitate strong partnerships that do just that.

Chapter seven : At the heart of sustainable pharma

At CPHI we want to play more of a role in assisting companies reach sustainable targets. Our own events are working to decrease our carbon footprint with sustainable materials, reusing materials year on year, and encouraging exhibitors to be more eco-conscious through our Better Stands initiative.

Foreword

Welcome to the annual Sustainability Report for the Pharma industry by CPHI, a testament to our collective commitment to fostering a healthier, more sustainable future for both our industry and the planet.

As the Sustainability Director of the CPHI portfolio of global Pharma events, it gives me great pleasure to present this comprehensive overview of the strides the industry has made in sustainability over the past year. In these pages, you'll find a reflection of our industry's dedication to not only meeting the needs of patients but also to stewarding the resources and ecosystems upon which our collective well-being depends.

Sustainability is not merely a buzzword for us; it's a guiding principle deeply embedded in all our actions. We understand that the pursuit of sustainability is not a solitary journey but rather a collaborative endeavour that necessitates dialogue, cooperation, and shared learning. At CPHI we've made it a priority to engage with as many colleagues and stakeholders from the pharma industry as possible, facilitating conversations that spark innovation and drive positive change.

In these conversations, we've witnessed a growing awareness of the interconnectedness between our industry's activities and their broader societal and environmental impacts. From reducing carbon emissions and waste generation to promoting ethical supply chains and equitable access to healthcare, the pharma industry is embracing its role as a catalyst for sustainable development.

Yet, we also recognise that our journey towards sustainability is ongoing and multifaceted. While we celebrate our achievements, we remain steadfast in our commitment to continuous improvement. By sharing our successes, challenges, and lessons learned, we not only hold ourselves accountable but also inspire others to join us in our mission to create a world that is healthier, more equitable, and more resilient for generations to come.

As you delve into this report, I encourage you to reflect on the collective impact of our efforts and to consider how we can further leverage our strengths and resources to address the pressing sustainability challenges facing our industry and our planet. Together, we have the power to create and effect meaningful change – one step, one innovation, and one partnership at a time.

Thank you for your continued partnership in making the Pharma industry – and the world – a better and healthier place, every day.

Silvia Forroova

Director – Partnerships & Sustainability, Informa Markets

Introduction

Creating a more sustainable pharmaceutical industry is a challenging and ongoing process, as it is across many other sectors. This sustainability report from CPHI Online aims to see how far we've come in recent years, building on the topics covered in our report in 2023 on the supply and value chain, and how different kinds of emissions are involved at every stage, and their impact on the environment.

This report looks to take these lessons one step further. Now that we have a better grounding in sustainability in the pharmaceutical world, we can take action. There are many initiatives, across healthcare and beyond, to encourage and assist players in their respective fields in improving themselves and their business models in respect to the environment and the people it affects. In the pharmaceutical industry this extends to many different aspects, with many avenues to look at and develop. This can also be relatively overwhelming, making it hard to know where to start.

The report will go into detail on some of the most discussed topics in the current pharma sustainability climate. It will give case studies of programmes and processes that can be put in place, provide solutions, and give more information on initiatives, networks, and frameworks that would be beneficial to be involved in, depending on the specific needs of the player.

The following includes insights from some of the most forward-thinking industry leaders. Hear from organisations who use their specific area of expertise to pave the way or give guidance on sustainable solutions, with a view to achievable outcomes that will limit the impact of the pharmaceutical and healthcare industry on the environment.

Experts from the PSCI, BioPhorum, and Anthesis among others comment on the ESG goals companies put in place, on how to develop a sustainable working and offering of a company, and how this is influenced by regulation and the use of partnerships.

Field leaders in packaging and materiality from Nelipak Healthcare Packaging and Pöppelmann FAMAC Pharma-Medical add their expertise and specific case studies on the innovations in sourcing, materials, and recyclability in pharma, with a keen focus on plastics.

We also take a look at the movements made by emerging markets, seeing how governments and companies are taking the initiative to use the unique opportunities that their regions offer.

Further insights in regulation are provided, as well as looking at the financial aspect of green solutions and green supply chains in the industry, and what this can mean for companies of all stages and sizes.

Finally, the report offers some introspection from CPHI. How do we, as an events company in pharma, contribute, what we do to mitigate our impact, and how can we continue to improve, as well as providing a practical platform to enable players across the industry to collaborate and improve.

Chapter one:

What did we learn from 2023 and where are we now?

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In the 2023 Sustainability Trend Report, some key themes emerged revolving around Scope 3 emissions, **collaboration, regulation, and the importance of sharing best practices.** Scope 3 emissions were determined to be the most harmful to the environment at this point in time due to their indirect nature, which has led to the question of who is culpable. This means little action has been taken to actually mitigate these emissions. Our experts wanted to see more reporting of Scope 3 emissions and more companies taking responsibility for these emissions throughout their supply chains. What we have seen is a definite increase in awareness of Scope 3 emissions and more efforts to improve reporting.

Many companies still do not report all emissions comprehensively, but they do report them to varying degrees, which is an improvement on previous years.

It's hard to definitively state whether regulations and legislature has improved globally in a conclusive sense in regards to limiting the pharmaceutical industry's environmental impact. However, there have been significant steps taken by some countries and governing bodies.

Nic Hunt, the Global Head of Sustainability at Nelipak Healthcare Packaging stated:

> **"More focus on sustainability strategy has led to reduced footprints, more circular designs, greater focus on resilience, ethics, labour and human rights, and increased actions to prove progress through credentialing and compliance. Capital flows into advanced recycling and other innovation is creating new options at scale and increased awareness of legislative change is contributing to aligned collaboration."**

The German Supply Chain Due Diligence Act is a prime example of recent legislative change, which came into effect from January 2023, the Act obliges companies that are headquartered in Germany to comply with a certain set of measures to ensure environmental and human rights standards are met.

Also in the past year, we have seen greater acknowledgement of the healthcare industry as having a large impact on climate change, which also offers an opportunity for improvement. At COP28 held in Dubai in 2023, for the first time a declaration on the field was signed – the COP28 UAE Declaration on Climate and Health – by 132 countries, proving to be one of the most popular declarations from the event[1].

The declaration states that: 'Climate change is the greatest threat to human lives, health, livelihoods, and well-being in the 21st century and amplifies peace and security issues'[1].

On a more molecular scale, when asked about the awareness of companies regarding Scope 3 emissions and their impact on climate change, experts state that they are seeing more steps taken by individual companies, Nicola Coles, BioPhorum said:

> **"Yes we are seeing license holders and suppliers cascading targets and education through their supply chain."**

Michael Gier from Pöppelmann FAMAC Pharma-Medical added:

> **"In our opinion, the industry has already realised this. What is needed now is consistent action across all stages of the value chain. We at Pöppelmann are committed to reduce our absolute greenhouse gas emissions by 2030 compared to 2021 by 50% in Scope 1 and 2 and 25% in Scope 3."**

Such commitments as the above are becoming more and more ingrained into the culture and future planning of companies throughout the supply chain, the results of which may still need some years to be seen.

When CPHI surveyed the attendees at the CPHI events, respondents commented on how committed they thought their own companies were to sustainability.

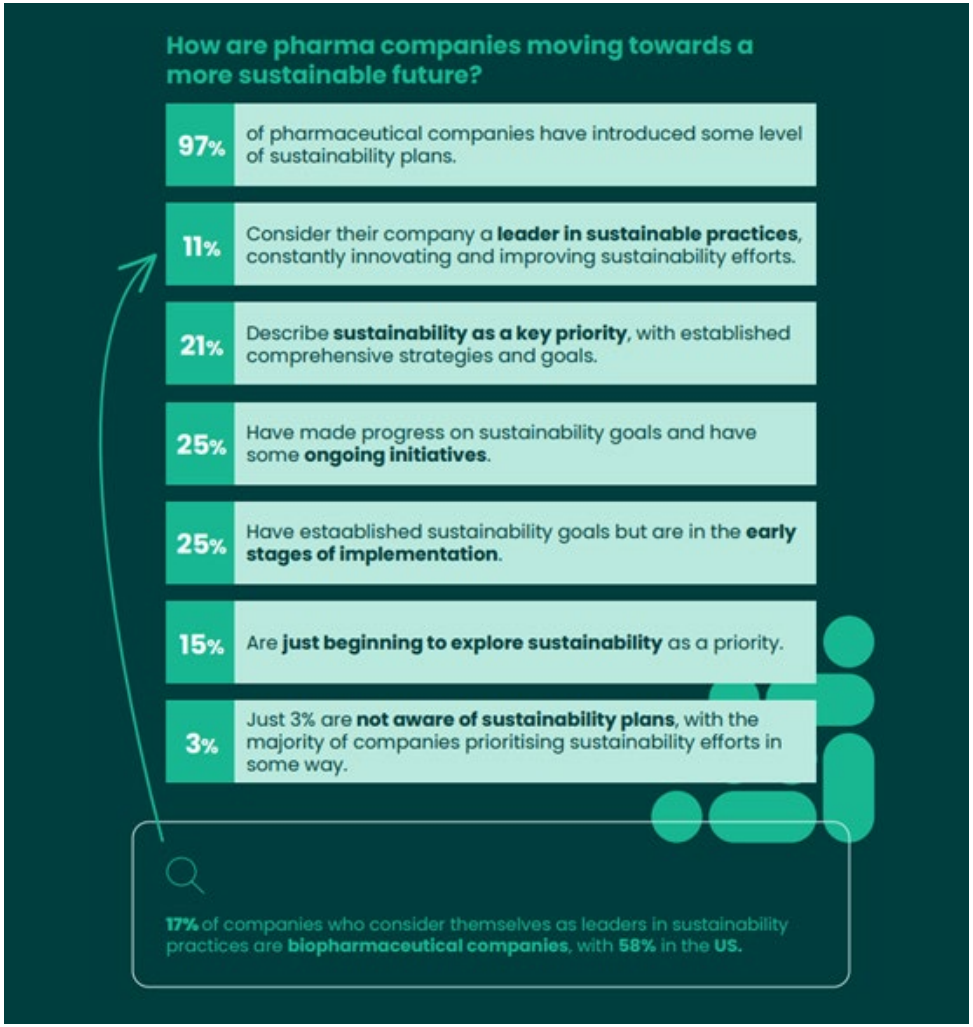

Figure 1: Source: Sustainability in Pharma Infographic [2]

The Chair of the PSCI, Deirdre O'Reilly, who is also Senior Director of Global EHS Supplier Operations and Business Development, Viatris, explained how they are hoping to support and encourage businesses to achieve their environmental goals:

> **"Addressing and reducing Scope 3 emissions is a huge undertaking for the pharma and healthcare industry and one that requires innovation and collaboration. Decarbonising the value chain can't be achieved alone, and we've seen a surge in partnership approaches to this through the Sustainable Markets Initiative and others. Through the PSCI, we're working to support our members with practical tools they can share with their suppliers like our Decarbonisation Pathway, which clearly lays out the beginner to advanced steps companies can take on the road to net zero. The challenge remains but is one that the industry takes seriously."**

The PSCI supports the work of Schneider Electric and their Energize programme, expert Lily Proom from Schneider also adds her considerations on how far the pharmaceutical industry has come.

"The pharmaceutical industry does seem to be actively reckoning with the need to address Scope 3 emissions. Schneider Electric manages the Energize programme, a collaboration of 20 companies that are working together to accelerate decarbonisation in the pharmaceutical and healthcare supply chain by providing renewable electricity education and purchasing support to pharma and healthcare suppliers. We have seen the number of companies sponsoring this programme – which means that they are actively working to engage their suppliers to learn about and purchase renewable energy – continue to grow in the past year. More Energize sponsors are holding supplier-specific events around renewable energy and emissions reductions, creating supply chain decarbonisation targets and plans to meet those targets, and setting expectations for suppliers around renewable electricity adoption."

"Many companies have supply chain emissions reduction targets, or targets for their own company that rely upon supply chain decarbonisation, that will come due in 2030 (or even sooner). As these deadlines approach, I expect that we'll see more and more action taken to engage suppliers and support them to reduce their emissions with programmes like Energize."

The proof of this action is increasingly visible in the steps that players in the pharmaceutical industry have been taking. These can be on a more individual scale, which we can see examples of from Pöppelmann FAMAC Pharma-Medical, who have implemented several measures:

1. Implementation of the initiative PÖPPELMANN blue®, to make products and processes as ecological as possible and achieve closed material loops, by working with all partners.

2. Product development according to ECO-design: where they design sustainable packaging that still meets the criteria for safety, machine compatibility, and hygiene.

3. A climate strategy in line with the 1.5 °C target of the Paris Agreement – now confirmed by the Science Based Targets initiative.

Gier listed the ways in which their company tackles Scope 1, 2 and 3 emissions:

"We at Pöppelmann achieve lower emissions in Scope 1 and 2 through:

- More LED lighting (in implementation)

- More photovoltaic cells on the roofs (in implementation)

- More e-mobility (in implementation)

We achieve lower emissions in Scope 3 by implementing true circular economy. Our largest lever is the circular economy. We already use 42% post-consumer recyclates across all business areas at Pöppelmann. Where this is not possible, we focus on eco-design to achieve savings in other ways:

- Post-consumer recyclate material (PCR-material) for protective elements

- PCR-material in the Halter Soundgenerator

- PCR-material for reaction vessels."

Proom details how working together has proven to be extremely successful when it comes to advancing decarbonisation across the industry:

"Industry-wide programmes to engage supply chains such as Energize can be highly impactful; oftentimes suppliers in the programme supply to multiple sponsors, and so the message they receive from sponsors to participate in the programme and pursue renewables is amplified. Industry-wide programmes also create simplicity for suppliers; rather than being asked to participate in ten different renewable electricity programmes, suppliers that supply to ten of the sponsors are asked to participate in one common programme. Finally, a programme like Energize that has collective industry support behind it is in a stronger position to effectively message externally about the need for supply chain decarbonisation in the pharmaceutical and healthcare industry, and drive engagement."

Speaking to the specific advantages of the Energize programme, Proom added:

"One of Energize's most unique benefits is that it offers participating suppliers the opportunity to pursue a 'multi-buyer power purchase agreement', wherein suppliers pool their electricity demand in a particular market to pursue a power purchase agreement as a group. This drastically reduces the electricity demand that a supplier must have in a market to pursue a power purchase agreement and creates opportunity for sharing of best practices between suppliers, which enables companies to pursue power purchase agreements who would not have been able to otherwise. This unique structure gives suppliers – who may not otherwise have been able to pursue this type of renewable electricity purchasing – access to long-term, environmentally impactful renewable electricity sources."

Renewable energy has come to the fore in the last year as a key part of the industry's action plan to reduce carbon emissions, several large companies have pledged to make the move to renewable energy, even in countries where this presents several challenges, such as in China[3].

Coles also confirmed the escalating efforts of industry leaders:

"Several consortia have come together to improve comparability of data by developing harmonised approaches to Life Cycle Analysis and Product Carbon Footprint for pharmaceutical products and their supplies."

Data is at the heart of many of these measures, by understanding the impacts as it comes down to the raw facts of the matter, consortia are able to use these figures to monitor and see significant improvements as initiatives continue and invariably gain ground in reversing harmful processes.

Chapter two:

Wrangling with regulation

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Many conversations over the past year have been centred around regulation and reporting in relation to environmental impact, specifically about the need for further regulation than is already in place [2]. Regulation around goals, whether companies should be fined if limits are exceeded, and other legislative tactics such as life cycle assessments need to be made compulsory and importantly, visible to the public as well as more visible in-industry, to increase transparency of operations and accountability.

It is essential stakeholders at all levels, especially in senior management to understand the importance of sustainability [4]. This can be through ESG reporting strategies to inform the industry on how companies are managing these strategies and future-proofing them.

Speaking to whether regulation is the key way to encourage further adherence to sustainability values and goals, and impress upon players in the industry the importance of protecting the environment as a critical human health factor, Coles stated:

> **"The biggest challenge I see for pharma is that CMC regulation has stifled innovation for so long that we have learned not to change, improve or adapt. For us to achieve the targets we have set and for us to reduce our environmental impact as a sector, we must work with healthcare agencies to approach change differently, so that sustainability is considered a factor alongside safety and quality."**

Another challenge surrounding legislation is the global applicability of any regulations. Regions all over the world experience different priorities when it comes to the health and pharmaceutical industry, and different scenarios that require tailored planning in this respect. Hunt commented on this:

> **"Universal regulation always simplifies understanding. That said complying locally may add complexity, not reduce it. While there is no consolidated legislation today, alignment towards establish polestars such as UNSDG is gradually bringing regions to the point of inter-operability, which may be the best solution, given full harmonisation is time consuming."**

Status update: Where are we now?

Currently, policy coverage across sectors is uneven. Broader policies implemented at the end of 2020 are projected to result in higher global greenhouse gas emissions in 2030 than emissions predicted by Nationally Determined Contributions [5]. This implies there could be an 'implementation gap'. If nothing here is amended or built upon, we could be left with a global increase in temperature of 2.2 to 3.5 °C by 2100 [5].

In 2019 the European Commission created a strategy called The European Green Deal. The Green Deal effectively roadmaps the plan on the way to the continent becoming the first climate neutral continent by 2050, creating a more resource-efficient and sustainable economy [6]. Although not strictly limited to the healthcare sector, the deal has been updated to include lessons learned from the COVID-19 pandemic in utilising green technology and digitalisation to reduce the carbon footprint of industry. With overarching goals including reducing net greenhouse gas emissions by at least 55% by 2030 the strategy is hoping to scale up the EU's manufacturing capacity for net-zero technologies, which extends to the pharmaceutical industry.

The legislation as a part of the Green Deal also includes the Net Zero Industry Act, the Critical Raw Materials Act and Reform of electricity market design. The Net Zero Industry Act aims to develop a regulatory framework that can be quickly put in place to fit industry specific needs [6]. The Critical Raw Materials act aims to ensure access to raw materials that are necessary for use in key technologies.

Directives as commissioned by the European Parliament are regularly being assessed and updated. One recent example is in the directive for empowering consumers in the green transition. This text was updated as of 17 January 2024. It decrees that companies cannot publish misleading marketing in regard to environmental action, and that traders have a responsibility to provide clear, relevant and reliable information, so that consumers can make informed decisions [7]. This piece of legislature aims to eliminate greenwashing, which is still a major concern across sectors.

One thing to note from these EU directives is that they are not necessarily specific to the pharmaceutical and healthcare sector, which leaves room for improvement.

One country that has taken some of the considerations of The Green Deal one step further is Germany, with their implementation of the Supply Chain Due Diligence Act (SCDDA).

The act requires companies that are headquartered in Germany to take responsibility for their environmental and human rights influences, whether it be their own internal operations or more indirectly with third parties that contribute to their supply chain. The Act requires these companies to monitor, report, and act on standards and any violations seen in their supply chain process. The Act covers a set of human rights and environmental risks [8]. The Environmental risks are outlined as per the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutions (POPs), and the Basel Convention.

Companies are required to have in place monitoring and remedial measures such as extended training, and further resources available. All of these due diligence measures are to be recorded and then published in a form of a report every year, and submitted to the Federal Office for Economic Affairs and Export Control for assessment [8].

Non-compliance with the SCDDA can lead to reparations for the company in the form of monetary fines dependant on the violation, and a ban on public tenders in Germany for up to 3 years [8].

Manser, President of Pantheon Strategies, goes into a little more detail around the effects of this kind of legislature.

> **"The German Supply Chain Act is relatively new to have enough data to respond to its effectiveness. It goes further however than the similar California Transparency in Supply Chains Act of 2010 (SB 657), which requires certain companies doing business in the state to provide consumers with information regarding its efforts to address the issues of slavery and human trafficking within their direct supply chain(s). In addition to prohibiting child labour and forced labour, the German Supply Chains act also includes provisions against manufacturers which disregard of occupational safety and health obligations, withholding adequate wages, ignore the right to form trade unions or employee representation bodies, the denial of access to food and water as well as the unlawful taking of land and livelihoods."**

Manser also compares to legislature in the USA:

"Given the German Supply Chain Act was enacted January 1, 2023, I'll focus on the California law. As the global supply chain is so difficult to navigate, suppliers are required to disclose their compliance, while the manufacturer of the end-product bears the responsibility… I believe this is certainly a worthwhile exercise to ensure companies are responsible for their supply chain, though I think it will be difficult to catch the truly bad actors who knowingly violate the law and are dishonest with the companies they contract with…who are the end sellers in the market."

In the EU, the Corporate Sustainability Reporting Directive (CSRD) ensures the company is accountable for their actions, whereby they are required to report and audit the impact of any corporate activities on the environment and society [9].

Life Cycle Assessments

Another area where experts have been calling for improvement, or perhaps just more stringent use of, is in Life Cycle Assessments (LCAs). LCAs are a comprehensive tool for determining the overall environmental impact of an individual product. The assessment takes into account all parts of the value chain that lead to a product being delivered for commercial use. It's a versatile tool and can be made to include products for machinery, technology, and drug products. Rather than just looking at the carbon output of a product, the LCA takes a more holistic view and can therefore give insights into aspects of the value chain

that have indirect impacts as well as direct. This gives a good basis for determining areas of improvement and modifications, and for considering alternatives.

Hunt commented that LCAs could be a first step in the right direction for regulating the industry:

> **"Currently – measurement & reporting are foundational 'go-tos' for where to start in regulating the pharma value chain. One easy example – life cycle assessment. While no two LCA's give the same results, making any quantitative decision a challenge, this could be better defined to make it a more universal tool."**

Considering the universality of regulation is a complex topic, it's much easier to have unified goals, such as net zero and switching to renewable energy, across regions, but the details of achieving these goals and using regulation to enforce them adds pressure in terms of time and open communication between more actors.

Hunt stated that focused legislation is rapidly coming through:

"In additional to national legislation like the SCDDA, the pace of regional legislation like CSRD and CSDDD is also currently high, as is sub-national legislation such as California SA253/261. It's worth considering industry reporting as well, such as EcoVadis and CDP. The purpose of all these it to drive sustainability, which is excellent, and I think healthcare will be most effective in that with a very targeted set of regulations."

The facilitation of reporting using groups such as EcoVadis is a huge motivator for companies to green their operations. If these can develop a formulation for reporting that works well, this could lead to a more seamless application of suitable regulations, as Hunt states.

Manser also contributes some ideas for groups and bodies that could provide support or guidance in the legislative space:

"Individual nations are reluctant to give up any decision-making authority and multi-national coalitions tend to move slowly. As a result, perhaps the fastest way to enact change is not from a regulatory perspective, but rather from the companies themselves. I'd suggest large trade associations such as the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) and Pharmaceutical Research and Manufacturers of America (PhRMA) each develop agreed upon principles that while voluntary, are required as a condition of membership."

"This has a track record of success, such as the voluntary code of conduct that establishes generally recognised industry standards for interactions between pharmaceutical companies and health care professionals (HCPs). It has been updated over time as government and industry expectations have evolved. This code was initially established by IFPMA in 1981 and has since been revised. The "PhRMA Code", largely resembling the IFPMA code, was first published in 2002. This code provides guidance for ethical interactions with HCPs such as meetings having a substantive educational purpose and prohibiting guests of the HCP at the educational event.

Similarly, adoption of shared industry principles for sustainability measures on a go-forward basis could be adopted and implemented."

A major part of the healthcare industry, as in other industries, that impacts the environment is energy use and the use of unsustainable resources to produce energy. Energy resources therefore represent a huge area of potential for change, with the possibility to move over to renewable energy consumption and for finding alternative fuels and processes that are less energy intensive. Many other industries are also looking into this aspect and using new technology and more out of the box thinking to divert operations away from highly energy intensive processes.

Hunt commented:

> **"Healthcare rubs shoulders with larger sectors such as personal care and food. The scale of these sectors means they are lead players in shaping infrastructure such as energy, materials production and recycling. As healthcare is dependent on the same infrastructure, alignment seems likely in some areas to enable healthcare to be effective and affordable."**

This is an area where large pharmaceutical companies are making good headway already, and using their influence to push this into several regions where renewable energy use is not a top priority. With these key players demanding the switch to renewable, more focus is being put on to being able to supply. One example we have seen of this in the past year has been with top pharmaceutical companies AstraZeneca, Lonza, Novartis, Novo Nordisk, and Roche starting plans to decarbonise their manufacturing operations in China. In 2023 China used approximately 9,220 terawatt hours of electricity [10]. Currently, the renewable energy providers in the country are unable to meet such a high demand, but with the backing of the pharmaceutical sector, there is more impetus to increase the supply.

For the agreement, Envision Energy, one of the biggest renewable energy firms in China, will be shouldering the responsibility of providing the power. This represents a great opportunity to increase infrastructure in the region to be able to achieve the decarbonisation goals for the industry, and once that is in place more firms will be able to help in the production of renewable energy so that we can move away from unsustainable energy productions, while still meeting demand and also Net Zero targets.

The partnership between the five pharmaceutical companies and Envision Energy in China is an example of industry players driving progress, prior to there being any legislative incentive. This demonstrates the willingness from all sides to strive for improvements in aspects of the operating procedure, from companies, groups, and government.

Hunt summarised this:

> **"All have a role. Enacting transformational regulation against a deadline of net zero by 2050 is a challenging but doable timeline. I would expect areas of development will be needed as regulations are first implemented, and one consideration for leaders/ participants is how to create the necessary space to learn-by-doing. As of yet no one has completed a CSRD submission – there is a lot of learning to be done."**

Chapter three:
Investing in sustainability

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Investing in sustainability, like investing in healthcare, is paramount to preserving human health. The connection between planet and people is undeniable and, to take this seriously, the industry must rethink how they are investing in greener strategies, and to ensure a more resilient supply chain. Currently, thought leaders do not think enough is being invested in this area to make a difference in the timeframes industry actors are pledging.

Hunt commented on how imperative it is that sustainable strategies have sufficient funding to be able to make a difference: “The population will grow a further 25% by 2050, and healthcare already contributes 4–5% of global GHGs. It is a material contributor to our future. Corporate, legislative and healthcare provider requirements for decarbonisation cannot be achieved by incremental innovation – there is insufficient time – significant investment, collaboration and prioritisation are required for healthcare net zero outcomes to be realised.”

Coles from BioPhorum added (with some incredulity) that surely finance and sustainability go hand in hand:

> **"To be brutally honest I continue to be surprised by the fact that Sustainability is not front and centre. Climate change is the biggest threat to global health and financial security. Without materials to make things with or people to selling things to we do not have a functioning economy. In that context – why would you not prioritise climate action? It simply doesn't make business sense?"**

Proom from Schneider Electric added her voice:

"Companies need to take investing in sustainability seriously because climate change poses real risks to businesses. A changing climate is bringing with it extreme weather, shifting ecosystems, new regulations, and new expectations from suppliers, customers, and other stakeholders. For companies to remain competitive, they should be planning for how they will adjust to this evolving landscape. Increasingly, companies are also being asked to report out on how they are responding to climate-related risks – whether via CDP, CSRD, California Climate Law SB-261. These laws have real penalties, from monetary fines to jail time, and so ignoring climate change and the risks it poses is becoming a decreasingly viable option.

Additionally, making tangible progress on sustainability initiatives at a company can take time. Sustainability initiatives often require buy-in from senior leadership to allocate time and resources to new activities, change management among teams whose day-to-day operations might be impacted, engagement of thousands of supplier companies, and actual implementation or development of new systems and technologies. It is important for companies to take investing in sustainability seriously now, so that they can create a realistic roadmap to meet future sustainability targets."

In light of these opinions there's clearly a lot to be done here, an aspect that arguably should have been addressed as a priority some years ago. Currently, we run the risk of not hitting Net Zero targets, which at the minute is a very real risk and some would say even an inevitability. To be constructive, our experts provided some advice for companies in positions to start or improve their green investing strategies.

Coles recommended:

> **"Educate your senior leadership team today – your people cannot do this without your support."**

"Grow your internal sustainability team today – not the marketeers but the number crunchers, people who can tell you about the environmental impact of your products from raw material extraction to use and end of life. If you don't know this, you cannot take meaningful action. It would be like trying to run your company without an accountant – unimaginable!

Invest in digitisation – how can you use all your data in a meaningful way to support your people to make good decisions at the right level. If you don't do this, trying to run a company without cost centres – again, unimaginable.

And this one is free – and doesn't require any investment, just a mindset shift – believe that you can and you will make a difference before it's too late."

Coles gives actionable points here, some things that can be implemented practically immediately, showing how easy some of the first steps in the right direction can be, there just needs to be the right motivation there to get things off the ground.

O'Reilly highlights how companies can improve their sustainable contributions by first improving knowledge, and the rest will follow:

> **"One of the most beneficial ways companies can invest in sustainability is by working in partnership with their suppliers to develop their sustainability knowledge. Sustainability is a fast-paced arena with new regulations and best practices emerging every month across multiple jurisdictions. Staying up to date is an ongoing challenge, which is why we provide expert-led educational content to suppliers through webinars, in-person conferences in China and India, and our e-learning curriculum around topics like Ethics, Health & Safety, and Human Rights. Partnering with suppliers to build capability is one of the best investments pharma companies can make."**

Manser builds on O'Reilly and Proom's points regarding an ethos of change coming from the leadership:

"There are often long-term gains from implementing environmentally sustainable technology in reduced costs. These will pay for the initial investment of the technology in just a few years and then serve as cost savings in water or energy reduction thereafter. The main driver for change starts with the executive leadership team of a given company.

If they identify a goal and support the effort for enhanced sustainability, that is more impactful and expeditious than regulation.

Companies can take advantage of government programmes to support sustainability can yield significant cost savings, such as low interest loans or tax credits. When thinking of ways to reduced energy use, implement material reduction/recycling in packaging, or water reduction/reuse/isolating from local wastewater systems... there are often government programmes for companies to take advantage of.

Another option is reaching out to a local economic development organisation is the most efficient use of time as they will often describe the programmes available. Reaching out to your energy supplier is a great way to learn what deductions may exist for utilising energy efficient technology.

Most importantly, do your research before beginning the project as often paperwork needs to be completed prior to the project to actually achieve the financial benefit.

There are companies that can assist in finding solutions, such as Johnson Controls. Often local energy suppliers can help via energy audits. These might show where insulation or more efficient mechanical equipment may reduce the demand for energy."

Manser believes that companies should keep moving forward, being the leaders in this field, as politics can cause disruptions in progress.

Hunt added more ideas on a more data driven side of things:

"Capital flows, continuous improvement, and behavioural change all deliver improvement. Developing robust and complete data gives the foundation to measure impact. The committed involvement of all stake holders, channelling their perspectives back into the business helps both focus and engagement."

> **"Investing time, forethought, as well as money provides a strong foundation to ensuring sustainability can run through the veins of a company or collective."**

Overarching advice of course is all well and good, but there are individual factors that would need to be considered, as well as challenges that can crop up. Our experts have also outlined some of these as it is widely felt that sharing information and strategies around progress and the blocks that progress inevitably brings is the fastest way to bring players to an environmentally efficient level.

Coles encourages businesses to follow progressive thought, pushing the boundaries a little with a 'bigger picture' timeframe more in mind, rather than chasing after quick wins with immediate rewards, because ultimately that will not serve in the long run. It is also financially beneficial for companies all throughout the supply chain, to think about green financing with a long timeframe, rather than short term goals, as this will be more sustainable and secure, reaping greater rewards down the line [11].

"Lack of awareness and a mindset constrained by traditional accounting timeframes that leads to poorly constructed, myopic business cases. Or great business cases that land in a system that can't process them because they don't pay back 'in time'.

Confusing market signals – you might just have to decide for yourself that this is the right thing to do – you may be ahead of your customers but your actions will ensure that there will continue to be customers."

Hunt impressed the importance of making financial decisions with environmental sustainability in mind, that way it works into all aspects of the business, and soon becomes a natural consideration:

> **"There are already many existing reasons for investment – safety, quality, and expanded capacity to name a few. These other categories are also needed to maintain healthcare. Sustainability is an additional investment driver. This means investment must be spread wider. One strong path forward is to maximise the sustainability impact of any & all investments – from low energy-use replacement machines, to co-location to reduce transportation – investment in sustainability should be inclusive of other criteria, not instead of it."**

This ties into the partnerships throughout the supply chain being mindful about how and where they are investing. Companies need to consider their suppliers, we already know that the pharmaceutical supply chain, particularly in the procurement stages is a large contributor of carbon emissions, so investing in the right suppliers, and working

with them in turn to invest in more environmentally friendly practices is an effective way to have a positive impact on climate practices. More metrics and data collection surrounding energy use, waste, and emissions in the supply chain can also help companies to see the areas that require improvement, and enable more informed investment strategies [11].

Proom solidified this message:

"Investing in supply chain decarbonisation is a critical component of a company's sustainability strategy. A 2020 CDP Supply Chain Report found that on average, a company's supply chain emissions are 11.4x higher than its operational emissions and account for ~92% of a company's total emissions. Therefore, any company that is aiming to make any meaningful decrease to its emissions must focus on its supply chain.

When it comes to investing in supply chain decarbonisation, where should companies start? Firstly, it is important to acknowledge that supply chain decarbonisation is complex and will require internal resources. Properly resourcing team members is critical; ensure that your team has enough full time employees dedicated to supply chain decarbonisation to meet the scope of this challenge. It is also important to engage your broader teams; your Category Managers and Buyers, who have direct access to suppliers, must be part

of this initiative. They are best placed to communicate expectations to suppliers and share resources and support with them. Create clear expectations for suppliers with clear penalties for failure to comply. While still less common, setting out real targets for suppliers with actionable

penalties or incentives is a highly effective way to spur action. Create educational resources for suppliers to make engagement easy for them. Leverage supplier events to promote expectations and resources to your suppliers. Finally, while gathering supplier data is important, utilise common data capture tools like CDP and EcoVadis as much as possible to reduce supplier fatigue."

This transfers across the whole of ESG principles, not just considering sustainability as a single aspect, but all leads to decisions being made with the backing of good financial sense, and should be the foundation of businesses.

> **"ESG is has a wide scope. It seems there are strong returns from establishing a basic capability across the entire scope of activity, as a solid platform to build from," commented Hunt."**

Smith championed the work companies are starting to put into

the rounded ethos of ESG, but still asks for more to be done:

> **"There has also been a commendable focus on social responsibility areas such as increasing access to medicines & healthcare. We also see many companies (I won't name names) sponsor small scale CSR projects which in the grand scheme of things do not provide large or long-term impact or improvements. The real impact can be found by taking responsibility for your own supply chain and ensuring everybody involved is treated in an equitable and fair way. Ensuring that people are paid & treated fairly, and that their natural environment is not being depleted all the way from raw material extraction through to logistics. It may seem like a daunting task, but the influence buyers can have on their downstream supply chain cannot be overstated."**

Coles added how companies can better invest in ESG as a whole to achieve this, urging them to look at the bigger picture:

> **"Work out the true costs of climate change – look at the impact of flood, drought on your materials, your manufacturing operations, consider how your workforce will function in 50 degree heat, think who will buy your product if huge parts of the globe's economy collapses. Then take another look at your investment pot ringfenced for sustainability and consider if it is enough."**

Manser makes an excellent point in highlighting that investors and the public are regarding green policies in businesses more highly, which can be beneficial to the companies, leading to greater rewards:

"Numerous investment funds also utilise this information to highlight companies that are making strides in 'green' sustainability enhancements or socially conscious companies making a difference in their communities and benefits for employees. This empowers individual investors to select how their funds will be directed."

At the next COP meeting, COP29, to be held in Baku, Azerbaijan in November 2024, finance will be coming under the microscope, with plans to address the import of having access to expansive funds to address climate action.

Investing in people also of course has a concurrent effect on the climate preparedness of a company/region. Global symposiums have presented research that supports the fact that investing in women is particularly beneficial to climate action, affirming that the two are closely interconnected [12]. Effective policy implementation has been shown to increase where political commitment and partnerships between different groups in society, especially with marginalised and often overlooked groups of people, such as Indigenous populations, ethnic minorities, and women are taken into account and strengthened [5].

Gender responsive climate initiatives can bolster productivity in this field. The addition of unique perspectives and different ways of problem solving that you gain from a diverse group of people can help to build a more resilient and responsive industry with respect to climate change [13].

These facts demonstrate how climate impacts are not just an economic burden but tackling them is a deeply interconnected issue encompassing several economic and political aspects as well. Investing in these areas, in the most thoughtful way by taking into consideration these factors, can lead to more effective measures in the fight against climate change, but also a myriad of societal benefits too.

Chapter four:

What can emerging markets bring to the sustainability table?

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Emerging markets represent a unique space for the pharmaceutical industry, each region has experienced its own individual challenges and specific ecosystem that makes them unique as a starting point for environmental action.

The potential in such areas is exciting, but has to be manged effectively, as Manser explained:

"Emerging markets have the potential to support sustainability, but that doesn't mean they will. Emerging markets allow for new construction to be done using the most efficient technology with the goal of reducing the carbon footprint and having lower operational costs.

However, the net savings after cost of initial investment must make it worth the venture. Lower environmental standards in some regions may make this less cost competitive for C-suites only interested in the financial aspect of the build out.

Additionally, many companies sell a product in other countries by licensing the rights to an in-state company vs establishing their own infrastructure. As a result, the terms of these agreements largely dictate the viability of expansion into that market. As a result, there may be little a company can do to impact change in an emerging market aside from requiring certain sustainability measures be adhered to via their licensing contracts."

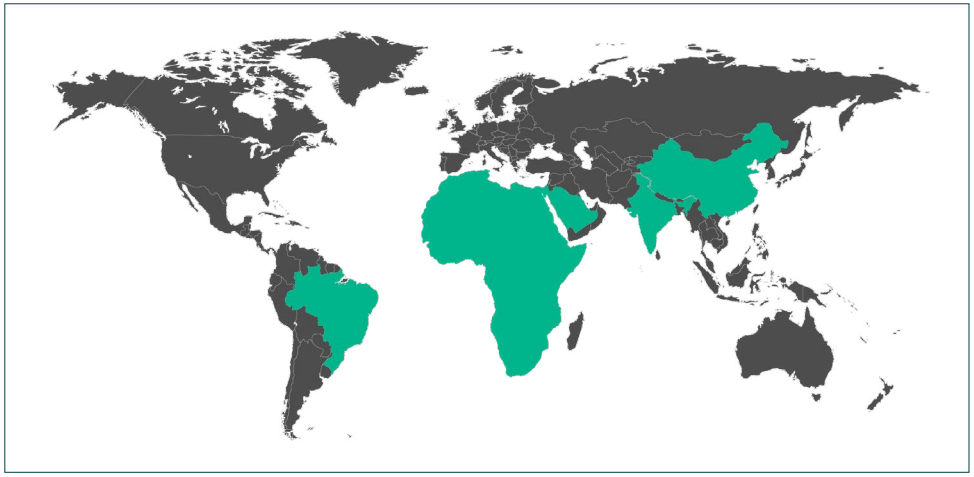

Figure 2: Global distribution of emerging markets in the pharmaceutical industry.

The points Manser raises here demonstrate the importance of a more inclusive approach to sustainability in emerging regions, these areas can't afford to fall into similar traps to more established markets with sustainability as an afterthought, only being pushed by individual stakeholders.

Financially, there is scope for emerging markets to invest in sustainability.

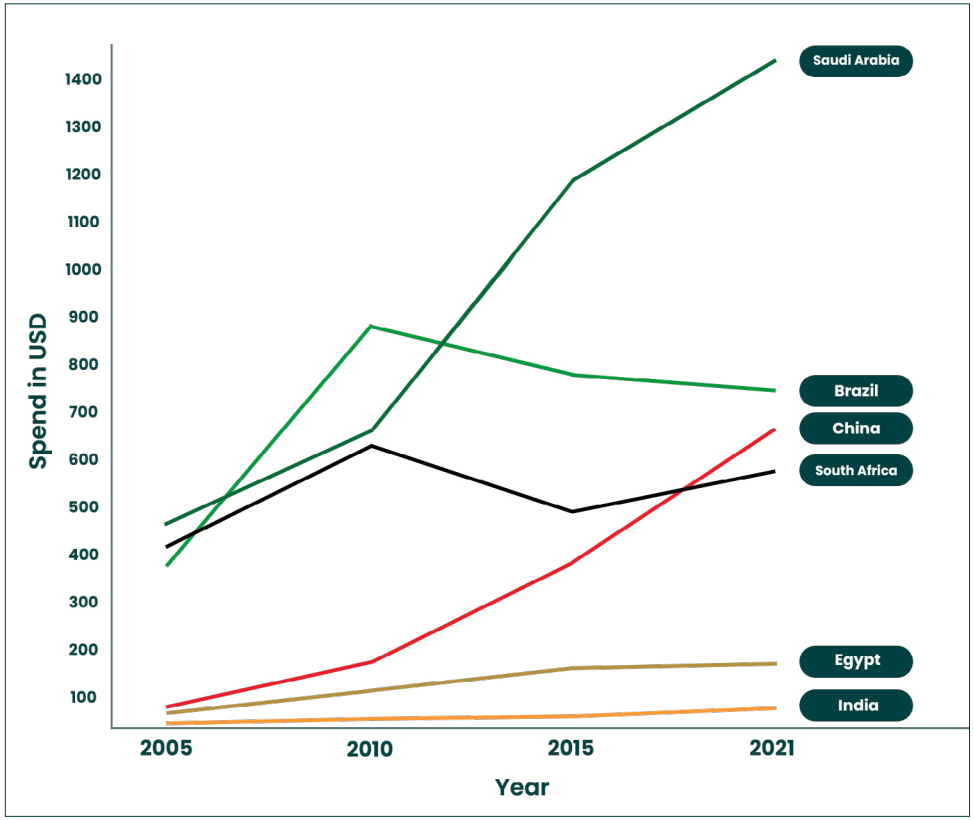

Figure 3: Total healthcare spend trends in certain markets in USD

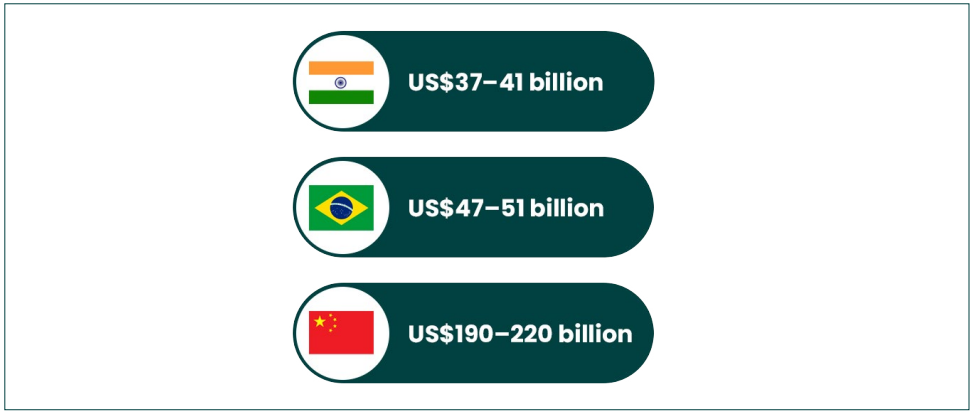

Figure 4: Predicted spend on healthcare in certain emerging markets in 2026

Africa as an emerging market is a particularly interesting case and is a relatively virgin region. Historically, the continent has had to rely almost solely on imports for medicines (70–90% of the drugs consumed are imported), which has proven disastrous for the population when confronted with certain diseases [14]. The area is heavily affected by infectious diseases as there are regions that have less access to things such as clean water and general preventative healthcare. This has led to many outbreaks over the decades, with cholera, the HIV and Ebola epidemics, and of course, recently, the COVID-19 pandemic. Without foundational health systems in place in the area the region is instantly left in a critically vulnerable position in trying to deal with such outbreaks [14]. Without the established infrastructure and resources, relatively

simple logistical undertakings are almost impossible. In the COVID-19 pandemic the distribution of vaccines across the continent proved extremely difficult without access to suitable transport, which needed to have cold storage facilities to ensure the vaccines were kept viable, as well as accessibility to more remote areas leading to an excessive wait time for the medicine to arrive where it was needed. This reliance on imports also leaves the continent vulnerable when there are disruptions in the supply chain, again as was demonstrated to devastating degree in the COVID-19 pandemic. Beyond the more notable and more well-reported infectious diseases, non-communicable diseases are also increasing in prevalence across the continent. As the population grows and healthcare generally progresses, cardiovascular disease and age-related diseases such as Alzheimer's, have been increasing across the continent, which carries its own burden [15].

All of these factors have a negative effect on the health of the population, and effectively impress the importance of development in this region. Africa needs to progress in the pharmaceutical field to be able to become more self-sufficient, and to increase preparedness so the population can be better protected and have the chance to thrive. As a new market, many of the established ways of practice aren't ingrained into the part of the industry that already exists, and due to some of the more unique aspects of the region, new ways of doing things have to be thought of.

Data from IQVIA predicts that the African pharmaceutical market is set to grow by 6% year on year over the next 5 years, bringing it up to US$34 billion by 2027, with universal health coverage propelling this development [15].

Initiatives from African Governments and the WHO are ensuring that the pharmaceutical market in Africa is being invested in. The African Development Bank along with partners including the Government of Rwanda, WHO, and others, launched the African Pharmaceutical Technology Foundation (APTF) in 2022 with the aim of increasing the continent's access to technology that would aid in the manufacturing of medicines, products, and vaccines, and build out their domestic capacity for manufacturing these in a sustainable way, in house [16]. The Board of Directors of the African Development Fund approved a US$11.96 million grant in February 2024 to accelerate the establishment of the APTF further and contribute to more clarification of regulatory frameworks in the region [16]. The fund works with a number of private and public holdings, including internationally, cementing their presence on the global pharmaceutical scene.

A stronger manufacturing capability in the country would contribute to better connections between pharma companies, medical professionals, and patients. By localising operations and reducing reliance on imports, confidence in the health ecosystem in Africa will grow, attracting further investment and more talent to the area, swelling the region's potential for growth and entrenching it as a competitive market in the pharmaceutical industry.

The Brazilian pharmaceutical market

The Brazilian pharmaceutical market is another merging market that is growing at a rapid rate, with revenue generated projected to reach US$20.18 billion by the end of 2024, with oncology predicted to be the largest field, generating USD$3.85 billion of that total figure [17]. The growth rate of 6.6% (for 2024 to 2028) is thought to be due to the rising demand for generics as healthcare costs increase across the globe, and where Brazil has strong manufacturing capacity, featuring companies such as Takeda, MSD, and Novartis among many others.

Brazil has many socioeconomic factors that make it a prime market for innovation in pharmaceuticals, reflected in its diverse production system. It's large, diverse population make a good location for drug discovery and development in different areas, using innovative technology such as cell and gene technology, which has led to the development of several cancer therapeutics [17]. However, it's geography and socioeconomic disparities has led to difficulties in distribution and equitable access to medicine. The National Health Surveillance Agency (Agência Nacional de Vigilância

Sanitária ((ANVISA)) is primarily responsible for regulating the production of pharmaceutical products, extending to the environment, processes, ingredients and technologies, as well as transport logistics.

After the COVID-19 pandemic, there was an impressive expansion in digital health and telehealth technology throughout Brazil but work still needs to be done to ensure this is distributed equitably across the country [17].

Sustainable action plans in Brazil

Sustainability and environmental protection is a complex topic in Brazil, home to 60% of the Amazon Rainforest it presents a more or less unique environment, which influences the global ecosystem. The Amazon Rainforest is integral to the world's equilibrium in the carbon and water cycles. 150-200 billion tonnes of carbon are stored in the Amazon Rainforest, and trees in the rainforest release 20 billion tonnes of water into the atmosphere every day [18]. The area is still under severe threat of destruction from fires and deforestation, with protection efforts from the Brazilian government being inconsistent due to changes in political leadership.

In spite of the lack of direction and unity from the government in Brazil, some companies still realise the importance of ESG and, considering this critically important corner of the world, the environment and sustainable practices in Brazil.

To give some examples of work that is being done in the country we can look at two case studies, firstly Takeda Brazil.

Takeda's factory based in Jaguariúna (SP) is a model for sustainability, even for its 31 plants from around the world, and is valued as a benchmark for environmental practices in laboratories in Brazil [19]. The plant has been developed to encompass all aspects of ESG, aiming to benefit the lives of their 450 factory workers, and the health of the planet at the same time by instigating the Takeda Global ESG policy, which focuses on pollution prevention, compliance with legislation, and continuous improvement plans. Their strategies are split into two main categories, water and waste management, and climate, carbon and energy [19].

The company is certified by ISO 14001, an environmental management system, and has an internal environmental, health, and safety policy. These two features help to provide a framework across these categories.

For water and waste management, the company limits the use of water to certain areas, but ensures that they don't use water abstraction in areas of water stress. The plants are based in river-basin regions and carefully monitor

their water consumption, also bearing in mind the general population. The water system is monitored via a system that includes internal and external inputs, the results of which are published every month, and actions taken on board as learnings and incorporated into regularly reviewed practices. This level of reporting and transparency brings endless benefits in terms of the environment, people, and for the business as stakeholders can easily assess the efficiency and performance of the company. Takeda also have established a project to collect water and reuse wastewater where they can. The project is still in its very early stages but already they have recorded good results, with 1000 m3 of water made available for cooling towers in the best month [19].

Takeda's waste management tactics are broadly based around waste reduction where possible, and appropriate disposal of waste, ideally through recycling and co-processing. They have also developed a Zero Landfill Programme, where they successful met targets of having no waste sent to landfill for two years running. These approaches lead to greater transformation of waste into fuel materials such as oil and gas, much less waste being directed to landfill sites, and an overall reduction in Scope 3 carbon emissions [19].

Carbon emissions are addressed more directly by Takeda Brazil in their Zero Carbon Project, which comes under the Global Climate Action Programme, where they are aiming to reduce greenhouse gas emissions by 2035 (currently they have achieved 40% of their target, with a reduction of 2,015 tonnes of total CO2 emissions) [19]. The projects focus on scope 1, 2, and 3 emissions, with activities to do so including replacing natural gas with electricity where possible throughout the factory and machinery. They have obtained renewable energy certificates in plant operations, and they have also invested in a biodigester to process waste, which reduces emissions associated with the transport of waste.

Takeda has taken a very public stance on their commitment to reducing emissions and working to reverse the effects of climate change. Their involvement of shareholders and regular audit and release of data helps to improve accountability and motivation. They are also involved with initiatives outside of the immediate company, such as the GHG Protocol and Science Based Targets Programme, reinforcing these commitments.

Takeda are a good example of how companies are tackling climate change. They underpin their strategies with financial and operational control and monitoring, emphasising the long-term thinking behind their initiatives and overall making their offering more ecofriendly and resilient for the future.

Grupo Eurofarma is another Brazil-based pharmaceutical company that is pioneering environmental and human rights initiatives in the country, and still sets a global example. The company is heralded as a flagship for sustainability, and to this day remains one of the only companies that has committed to achieving a 100% reduction in direct (Scope 1) emissions, along with other impressive commitments through the use of wind power enabling them to a 100% clean energy matrix by 2024 [20]. In terms of supporting wider, global goals, Eurofarma is a signatory on two United Nations global initiatives, and they are strongly committed to five of the Sustainable Development Goals.

One impressive step Eurofarma is taking that was pertinent to highlight is their commitment to renewable energy, something that is becoming increasingly seen as an imminently achievable strategy, that will have a considerable impact on the reduction of emissions, and so is being adopted by several countries in emerging markets. In 2022, Eurofarma entered into a 15-year contract with Omega, for the self-production of wind energy [20]. Omega is the largest generator of clean energy in Brazil. The wind farm in Bahia will ensure that all plants and operations in Brazil have energy from a clean source, and with the production of an average of 15.6 megawatts (MWm), will be able to meet 100% of the company's energy needs. This will go a long way to reducing the majority of the company's Scope 2 emissions, with a predicted calculated reduction of 260,000 tonnes of CO_2 in the atmosphere by 2038 [20].

Grupo Eurofarma has several other initiatives to support sustainable development, including around waste management, creating a circular economy, the use of raw materials and in product design. The innovative ways the pharmaceutical company is pursuing creating a model where the environment is considered in every aspect has also received recognition from the financial sector, showing again how important the relationship between sustainability

and economics is. In 2022, the company was awarded the first Sustainable CDB title developed in Brazil. This sets out environmental and diversity targets that must be met by the end of 2025, it is the first initiative of this model in Latin America [20].

Saudi Arabia

Saudi Arabia, extending to the MENA region, is a hotbed of activity in the pharmaceutical industry at the minute. The Saudi Arabian government is working closely with pharmaceutical companies and other bodies to create opportunities in the region and the Kingdom of Saudi Arabia, to place it as a leader in biotechnology and pharmaceuticals, and doing so with a strong emphasis on sustainability. The area has garnered a lot of investment, which has led to the building out of appropriate and vital infrastructure. The pharmaceutical market in KSA was estimated to be worth **US$10,849.4 million** in 2021 and with a projected growth rate of **9.3%**, is expected to reach **US$19,764.8 million** in 2028 [21]. Much investment has gone into R&D – accounting for this prediction of rapid growth – to put the region at the forefront of innovation, with the idea to attract the top talent and creative thinkers to the area so that they create a maelstrom of ambitious ideas, that with the backing of funding, will be able to be seen to fruition.

As part of their National Biotechnology Strategy to achieve this dream, Vision 2030, and beyond, one of the pillars is plant optimisation. This focuses on the environment and moving the economy and main source of wealth of the KSA away from oil towards more green, futuristic, and responsible ventures [22].

As it stands, Saudi Arabia import most of their medicines. This is a more unsustainable route, as it means they are less self-sufficient and more vulnerable to supply chain disruptions, and less environmentally friendly as the carbon emissions from transportation and storage are unavoidable. To improve this situation, the Saudi Arabian Government plans to invest US$65 billion in healthcare infrastructure in the region, with sustainability literally built in [21].

The Kingdom is aiming to tackle climate change from several directions, taking the form of three main targets. The first is to reduce emissions, the second is to make the kingdom greener, and the third to protect land and sea. There are more than 80 initiatives the Kingdom are working on to achieve these goals.

One is by increasing capabilities in renewable energy, to achieve a goal of 50% of the region's power generated from renewable sources by 2030 [23].

Plans include building out capacity from new energy sources, improving energy efficiency across sectors, and developing a carbon capture and storage programme. These strategies are included in the Saudia Arabia Energy Efficiency Programme (SEEP), which activates new standards of energy efficiency across power generation, water desalination, and electricity transmission and distribution. There are further initiatives to use carbon capture to manufacture chemicals more sustainably, waste management, and a mangrove planting pilot scheme to name a few [24].

The ecosystem in Saudi Arabia means that climate change is a very visible issue, the expanse of desert means less greenery and less water are available in the immediate surroundings. The government has committed to rehabilitate the land, specifically 40 million hectares of degraded land, by planting in the region of a billion trees [25]. By increasing the biodiversity of the area and improving the health of the land, human health will follow.

In a recent Keynote speech at LEAP in Riyadh earlier this year, Dr Claudia Palme, Senior Executive Advisor for Strategy & Middle East, drove home the idea of interconnectedness, and how this was at the heart of the National Biotechnology Strategy in KSA.

"Green science is integral to biotechnology – it comes together with the One Health concept from WHO – the idea is that people, plants, and animals all integrate on a common biological basis, the health of each directly relating to the health of the other."

NEOM – a new future

Looking to the future of Saudi Arabia means talking about possibly one of the largest and most ambitious projects the world has seen in the form of building a new, smart city – NEOM. NEOM is the vision of the future of urbanisation from KSA, based around core values of business, liveability, and conservation.

With an investment of US$500 billion from the Public Investment Fund of the Kingdom of Saudi Arabia and local and international investors the new city will be a centre of innovation and talent across 14 main focus areas. Some of these include water, energy, and health, well-being and biotech, making it the perfect breeding ground for pioneering sustainability ventures in the pharmaceutical space [26].

One advantage of building a city from scratch is that sustainability can be built into everything right from the start. Climate affirmative goals have been set out from the very beginning, such as being carbon neutral by 2030,

creating a fully circular economy, and building the first large-scale 100% renewable energy system in the world, to completely meet the needs of NEOM's inhabitants and infrastructure [26].

One advantage of building a city from scratch is that sustainability can be built into everything right from the start. Climate affirmative goals have been set out from the very beginning, such as being carbon neutral by 2030, creating a fully circular economy, and building the first large-scale 100% renewable energy system in the world, to completely meet the needs of NEOM's inhabitants and infrastructure [26].

An ethos of care has been embedded into the planning of the urban haven, with a promise to continually strive to learn and adapt to changes and understanding to ensure that there are only positive effects on the environment and human health, leaving a better place for future generations.

Manser commends the work of new and emerging markets but makes it clear that we can't forget the influence of our most established markets, and that they in turn have to view sustainability through a new lens and drive progress in a global effort:

"For true progress to be made, it must come across all nations and all industries. If not, the process will sink in a quagmire of its own weight. When the people of one nation or one industry resist behavioural change or perhaps face moderate cost increases, they'll be quick to point to where no progress is being made somewhere else. To gain inertia for the process, the largest nations with the greatest manufacturing must make an effort to advance sustainability. Just as important, the incentives must be funded by the government or the enforcement must be significant enough to require change and not, for example, be a small fine that companies will see as just a cost of doing business."

Chapter five:

We're all living in a material world

Chapter five:

We're all living in a material world

Materials, how eco-friendly they are, whether it is in acquiring them or getting rid of them, are a huge part of the pharmaceutical value chain. Thus making them a priority when it comes to developing ways for the industry to become universally more sustainable.

Coles commented that you really need to start at the beginning to see where your greatest impact in terms of materials is, and then go from there:

> **"First step – map your supply chain and understand the impact on nature and biodiversity."**

Understanding the impact here is key, and an important part of connecting the dots between elements of the pharmaceutical industry and the impacts down the line on ecosystems, biodiversity, and animal and human health.

One notable problem product is plastics. An ingenious and game-changing material in itself, has now unfortunately become quite the villain of the story. Although endlessly useful, due to its ease of manufacture into whatever its needed for, its composition making it easy to sterilise and mould; plastic is made from non-renewable sources, uses up vast amounts of water and energy in its manufacture, and is infamously non-biodegradable. This is where the narrative has to change not only for pharma but other industries as well. To do this, viable alternatives need to be found that can provide the same level, the level that the industry has become used to, of convenience and usefulness.

Smith, from Anthesis, commented on the options available for alternative materials and plastic reduction.

"With my background in chemistry, I love new materials and think there are some really interesting developments. However, I worry that in some cases they are a distraction and that often designers are hoping for a 'silver bullet' perfect material which will solve all their challenges. This will not happen, no single material can give the variety of functionality and properties needed in this space.

I think we need to be looking at our current suite of amazing materials – rationalising them and making best use of them.

- Removing the ones we now know to be problematic, materials such as PVC have issues right through the supply chain from hazardous raw materials to challenging end of life options.
- Reducing the complexity of packaging and devices to aid the end of life.
- Ensuring packaging is not over specified. Designers have used the 'better safe than sorry' approach in many case, but this has led to lots of unrecyclable multi-layer packaging being used which has no realistic end of life.

Let's make sure the materials being used are the right ones, being used in the least amounts.

I do think that in the long term there will be a shift toward bio-based feedstocks. This will take decades, but I think there is recognition that the petro-basis for the chemical and materials industry will need to shift."

As Smith mentioned, the 'silver bullet' for materials, of which many would say that plastics came as close as you could get, is not a realistic ideal. She goes on to say this cannot deter people from trying to find an alternative to plastics, reiterating why plastics are so harmful to the industry and to the planet.

"We cannot keep extracting oil to produce plastics & chemicals forever, and the pharma industry will need to prepare for the eventual market shift. It is expected that in the long run the chemical & materials industries will shift towards bio-based feedstocks. In the short-/medium-term there is likely to be a shift towards use of recycled content. The key to this shift will be ensuring a stable and ample supply of high-quality recyclate into the manufacturers. Pharma companies can begin to contribute by taking ownership of the fate of their devices and packaging and ensuring they are able to feed into the recycling supply chain. Either through existing recycling infrastructure (packaging) or through specialist take back schemes (devices and specialist packaging).

Chemical recycling is also expected to be a key technology for allowing the pharma industry to incorporate recycled content into their devices and packaging. There will always be safety and contamination concerns from mechanically recycled plastics, but the outputs from chemical recycling processes are considered equivalent to virgin materials."

Pöppelmann FAMAC Pharma-Medical gave an example of what they are trying to do in this area to limit plastic use, or where they can, recycle it effectively:

"Responsible use of natural resources to protect the environment and climate is a matter of course for many companies today. However, in sectors such as the pharmaceutical industry and medical technology, this is not so easy to implement due to regulatory requirements.

How to systematically achieve sustainable packaging that meets all requirements in terms of product protection, machinability, hygiene, and convenience, while at the same time protecting the climate and conserving resources, is the daily challenge of our packaging development, which is based on ECO-design. The keywords "reduce", "reuse" and "recycle" are at the heart of our efforts to ensure the sustainable use of resources. At Pöppelmann, we therefore not only consider the product itself, but also the entire product life cycle as well as the upstream and downstream process steps."

Gier further highlights the sustainable products in series in various sectors that they have developed under PÖPPELMANN blue® @FAMAC Pharma-Medical:

- For a stand-up pouch, we have changed the cap to a post-consumer recyclate. CO_2 impact: - 49% [Evaluation of the material processing including the shipping packaging]

  See more

- In the laboratory & diagnostics area, it was even possible to use post-consumer recyclate. CO_2 impact: - 62% [Evaluation of the material, the processing including the shipping packaging]

  See more

- In medical technology, GHG emissions can be reduced through sprue recirculation and packaging optimisation. CO_2 impact: - 6% [Evaluation of the material] and - 32% [Evaluation of the transport Gate PP to Gate Customer.]

  See more

Although sustainability has been long ingrained in the core of what Pöppelmann FAMAC Pharma-Medical do, meaning their product innovation has always had sustainability front and centre of the genesis of their developments, you can easily see the potential for the incorporation of their methods and materials into existing businesses that are trying to improve in these aspects, giving valuable lessons for others in the industry.

Smith is able to give suggestions to companies on how to deal with products at the end of life, a key challenge the pharmaceutical industry faces.

"Designing for end of life, whether that be recycling, reuse, incineration etc. Whatever the end of life is likely to be for an item, it should be taken into account as material and design choices are being made at the beginning of a products life. As an example, halogenated materials such as PVC can form ozone-depleting chemicals during incineration and therefore should not be included in products that will go to incineration as is often the case for contaminated medical waste.

It is also important that the right end of life is chosen. In recent decades there has been a shift from durable, reusable devices towards single use options, an example might be surgical instruments. These may simplify hospital and patient protocols, but they create an enormous amount of waste. The industry needs to think about how to reverse this trend and work out how to convert some of the single-use items they currently make reusable, durable and profitable. This might include changing their business model as well as the product design.

Taking responsibility for the end of life of products that you place on the market. Whether this is by education campaigns, working with hospitals to improve their waste procedures or setting up consumer take back schemes for specific products and devices."

Further than plastic, Hunt is excited about the prospects that moving away from plastics can create, there's so much scope for innovation and new discoveries here, if you can think outside the box, it could be an intriguing area:

> **"Recycled content is commonly used, perhaps not as well recognised as it could be. With thought, the scale of use can be expanded today. The term "virgin plastic" could be disaggregated – it could be oil or plant derived, direct from plant or from plant-based products (cooking oil) for example. Each has a different sustainability proposition. What is exciting is this range of solution gives pharma options."**

Another way pharmaceutical companies are working towards more sustainable material use and production of products is by going right back to the start – with the chemistry. Using green chemistry to develop new products helps to reduce the use of hazardous materials, reduce waste, and increase energy efficiency, and is an area that companies are starting to look into more and more.

Figure 5: Recycling of materials throughout the value chain

Hunt suggested some areas of potential interest:

> **"Various green chemistry options are emerging. The diversity is both beneficial and a challenge. One area of real potential is the creation of conventional polymers from by-product and waste plant and plant-derived feedstocks. A watch out is always complexity in waste streams."**

Smith, an expert in the chemical side of things answered how companies can utilise green chemistry to reduce their carbon footprint:

"The 12 principles of green chemistry were developed 26 years ago and remain the principles by which the chemical and pharmaceutical industries need to adhere to as they move towards a sustainable future.

If by the question you in fact mean bio-based chemistry then I believe that in the long term this is the direction of travel for all chemistry, including pharmaceuticals. In lifecycle analysis the attribution of CO_2 uptake during the growth phase of the crop is not yet standardised and the method of calculation will also depend on the nature of the final product being analysed. Therefore, whilst this is something all companies should be thinking about, it may

not directly feed into carbon reduction calculations at this time."

Recyclability and materiality is an interesting space in the industry. As we can see from the expert comments there's a lot of room for ideas and development here. This is where emerging markets and start-up companies can really come into their own. With the space and flexibility, and in regions with plenty of funding available for exactly this such as in Saudi Arabia, start-ups and innovators have the opportunity to take the lead in this area and move away from more traditional ideals of material and technology use, that can be put to better use with a bit of imagination.

Coles added to this:

> **"It's going to take everyone – start-ups have the agility, but we also need scalability."**

"It's going to take everyone – start-ups have the agility, but we also need scalability."

Expanded upon by Smith:

"Small and young companies are agile and have the ability to enact change much faster than larger, more established companies with set policies and procedures. However, their lack of resource often holds start-ups back so in many cases the best results are seen when start-ups and large companies combine."

Hunt cited recycling as an area where start-ups have proved particularly beneficial for progression:

> **"A good example is the combination of start-up innovation and corporate investment to build capacity in advanced recycled materials. Incremental innovation is not sufficient to achieve the required improvement in the available time, and start-ups are well placed to contribute transformational innovations."**

Hopefully emerging markets can provide the latitude for such growth, together with the freedom of thought.

Chapter six:

Collaborative action through partnerships

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Collaborative action through partnerships

In last year's sustainability trend report from CPHI Online, one of the key takeaways that we had from our experts, and that we have been hearing time and time again since, is that collaboration is key. Creating partnerships that are effective and solid can enable and encourage a rapid level of diligent work to combat climate change from the stand point of the pharmaceutical and health sector.

Partnerships and collaboration are something the pharmaceutical industry had to learn how to do effectively very quickly in the COVID-19 pandemic, and now is a strategy companies are wholeheartedly embracing. In sustainability however, it's still hard to know how best to go about these partnerships to be as effective as possible as sustainability goals and Net Zero targets loom ever closer. Our experts now weigh in on the best way to manage and navigate these partnerships, for the best outcomes.

When asked how companies can develop their partnerships to elevate their sustainability offering, our leading experts advised the following.

O'Reilly from the PSCI:

"Pharma companies can elevate their sustainability offering by leveraging industry-led collaborations. For those at the starting stage of their sustainability journey, to those who are leading the charge, there's so much knowledge, efficiency, and value to be gained in working collaboratively. That's why the PSCI Principles and audit sharing is at the heart of our mission. By using our industry-approved audit framework and platform, pharma and healthcare companies can focus their energies on helping suppliers improve their sustainability practices, instead of auditing the same site multiple times."

Hunt also contributed to this:

"The sector is an early mover in ESG commitments, initially as individual enterprises. Alignment and coordination of requirements between and within pharma companies would enable partners to best deploy resources. A useful, simple example is credential or survey requests from pharma companies to suppliers, which is often site to site, not company to company. This often results in multiple responses to the same questions from within a single, multi-site supplier. As information governance develops, this is likely to improve."

Coles gave some sound advice to really push companies to just start trying things, as a team, and finding what works for them:

> **"Actively take part in cross value chain collaborations, be prepared to give and take, and don't just do it for the marketing collateral. Trial things as a group – in this new world our instincts about what works are not well developed. Try things, measure things, and be prepared to say it didn't work but we did learn something from it."**

William Powers, Senior Director of Business Development & Marketing at Singota Solutions gave some real life examples of how small changes with who you're working with can have wider impacts, reducing waste and reducing costs.

> **"Working together can help. For example, use of reusable shippers (packaging) can reduce the landfill and waste problem. CDMO's can work with their clients to identify opportunities to use these shippers. This solution works best when repetitive shipments are being made to the same destination, and the empty shippers can be shipped back to the CDMO in a cost effective manner (many of them on pallets, for example)."**

Hunt drives this home with further examples:

"Creating sustainable healthcare requires value chains to collaborate. No single tier is responsible or has the answer. Partnerships open the door to combine incremental changes into a transformational move. For example – reduced complexity packaging, labelled better, enables easier separation by hospitals into more economically attractive waste streams, increasing the availability of high chemical value materials recyclers in a circular economy to recycle back into economically attractive feedstock for packaging. Success is dependent on partnership."

With even more emphasis being put on building partnerships, the sharing of information, of failures and successes, the industry is certain to progress in leaps and bounds when it comes to fighting climate change.

Chapter seven:

At the heart of sustainable pharma

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At the heart of sustainable pharma

CPHI, organised by Informa Markets, is the world's largest pharmaceutical exhibition, boasting 9 annual events across the portfolio. This in itself has its own carbon footprint to confront. At CPHI, working in the pharma industry we take a lot of care to consider how the industry works, and the impact on the environment. Part of this is how we also contribute to climate change, and then how we can help minimise this impact. By publishing material such as an annual Sustainability Report, we aim to connect different actors in pharma and nurture a conversation around how to work together to manifest change.

Our hopes for the industry in this area, and our role in it, is encapsulated by Smith:

"There is increasing awareness and acceptance that this task ahead of us cannot be achieved without collaboration. These events act as key touch points in creating new and fostering existing collaborations. We also heard from some great collaborative organisations in the Pharmapack conference!"

Hunt added:

"Industry events can act as accelerators. Improving sustainability involves change at company, supply chain, industry and national levels. Learning as individual organisations is obviously key, and bringing these together at events delivers both a wider pool of ideas and understand. It also contributes to harmonisation, which in turn leads to effective application of resource."

On location at our events we have a strong content offering around sustainability for attendees to learn more about the biggest trends in the field, from seminal speakers.

Commenting on this offering from one event in the CPHI portfolio, Pharmapack, Smith stated:

"The sustainability stream of the Pharmapack conference was really popular, which shows people are interested and want to learn. I think it needs to remain high on the agenda so that it cannot be ignored."

On a practical level when planning our events, we need to look at the environmental footprint we have. In doing so, CPHI has taken a number of steps to reduce waste, increase recyclability, and reduce emissions across our whole portfolio.

As we are conscious to ensure we are making the right choices, we regularly survey the people attending and contributing to our events to find out what they consider to be the most important areas for focus in sustainability, and for us, the main areas for improvement.

From these insights, CPHI has removed excess use of carpeting where possible at the events, more sustainable food options and food waste collection initiatives on site, and encourage people to use public transport, as well as recommending travel by rail rather than air on route to the shows [2]. With thousands of exhibitors attending our events each year, we're conscious of the scale of the events and the amount of materials, particularly non-disposable materials that are used in the stands. This motivated CPHI to create a way to manage these materials more, in a way that would benefit us, the exhibitors, and the planet. That's where Better Stands was born.

The Better Stands Programme means we can work with our exhibitors and the contractors to eliminate the waste from single-use, space-only stands, and ensure they have a life beyond 2 or 3 days. We are aiming to eliminate all use of disposable stands from our events by 2030.

Commenting on the programme, Silvia Forroova, Director of Sustainability and Partnerships at Informa Markets, states:

> **"The Better Stands programme revolutionises our events by promoting sustainable exhibition stand construction. It fosters long-term environmental responsibility, aligning us and our exhibitors with green practices, including reusable materials and structures. This initiative enhances our event's reputation, driving industry-wide change towards eco-friendly solutions."**

From the last iteration of CPHI Europe held in Barcelona in 2023, when surveyed 55% of respondents at the event stated that they believed that the Better Stands programme could have a positive impact on the environment.

To see more on how we are hoping to achieve this, and how to make your stand better, find out here.

Conclusion

It has been encouraging, in the past year, to see the response of pharmaceutical industry to climate positive actions and the changes that have been made in many of the ways all actors conduct business in the field. From last year's report, which showed Scope 3 emissions as a major area for concern, especially as many companies were seemingly unaware or actively ignoring their impact, the industry has come a long way. Scope 3 emissions are now often a highlighted and targeted area for companies working towards reducing their environmental impact. As expected, the industry is continuing to see the benefits of working together, and in fact how vital this collaboration is, to support all players from start-ups, to big pharma, to governments, to advance with unified progression to a more sustainable future.

This report has highlighted some of the areas of greatest potential for measures in environmental protection, and aims to give some direction about how to achieve successes here.

Universal regulation may be a long way off, if not just a pipe dream, when it comes to sustainability. However, governments across the world are demonstrating dedication to climate initiatives and incentives to further climate action; although, seeing the results in time might be another matter.

Further than the pharmaceutical industry, other key sectors are seeing the interconnectedness of climate resilience. The financial sector is deeply involved in supporting sustainable action, with more visibility around investment and a greater acceptance of the amount of funds needed to enact change, with many banking associations across the world now providing advice and guidance to companies on how best to invest in a greener future for all.

Looking to emerging markets to change the way the industry incorporates ESG into every aspect of business is a great marker of progressive thought and the open-mindedness of the industry that we are starting to see. With this being built on with more collaborations and partnerships being developed every day shows the determination for advancement.

Throughout the report our experts repeatedly drove home the message that sustainability must be a principal priority across the pharmaceutical and healthcare industry, and that regulation, investment, and partnerships are the vehicles critical to realising sustainability goals.

Resources

Looking for more content on sustainability in pharma?

A key component in becoming more sustainable as an industry is the ability to access reliable information, insights and case studies from market experts. To support our community, on CPI you'll find our 'Sustainability Hub' which offers thought leadership on building a circular economy in pharma, in the form of interviews, articles, industry news, reports, webinars and podcasts.

Have a sustainability story to share? **Reach out to Sustainability Editor Lucy Chard.**

Click here to reach out

2023 Sustainability report

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Sustainability Infographic

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Pharmapack sustainability wrap-up

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With thanks to our contributors for their time and expertise

Nicola Coles

Director, BioPhorum Sustainability

Nic Hunt

Global Head of Sustainability at Nelipak Healthcare Packaging

Michael Gier

Key Account Manager, Pöppelmann FAMAC Pharma-Medical

Lizzie Smith

Senior Packaging Consultant, Anthesis Consulting Group

James Manser

President, Pantheon Strategies LLC

Deirdre O'Reilly

The Chair of the PSCI, and Senior Director of Global EHS Supplier Operations and Business Development, Viatris

Lily Proom

Senior Programme Manager, Supply Chain Renewables, Schneider Electric

William Powers

Senior Director, Business Development & Marketing, Singota Solutions

Lucy Chard

Author, Digital Editor, Informa Markets - Pharma.

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