Decarbonization: Accelerating the transition to net-zero

Discussion document

June 2023
Why should Pharma companies care about Decarbonization?

Pharma companies and healthcare providers account for ~10% of GHG emissions – higher than either the aviation or shipping industry.

From 2019 to 2022, the number of life sciences companies that have committed to or set science-based targets for emissions reductions has increased from 7 to 104.

If the global healthcare sector was a country, it would be the fifth largest GHG emitter on the planet - 2 gigatons of CO2e annually.

For generics players, 75-80% of emissions come from Scope 3. Of these, the majority (50%) are in Purchased Goods and Services due to production of APIs, excipients, and process chemicals.

Source: McKinsey white paper – “Making supply-chain decarbonization happen”
Objectives for today

WHY NOW – Trends on decarbonization for Pharma companies

WHAT IS INVOLVED and WHAT WILL IT TAKE

WHAT CAN YOU DO to act now and accelerate your journey to net-zero
Stakeholders across the value chain are moving to action

A. Regulatory and customer demands

- Announced net-zero targets in UK
- Pledge\(^1\) to reduce emissions by 50% by 2030 and net zero by 2050
- In India, filing of BRSR\(^2\) made mandatory by SEBI from FY23

B. Investor expectations

- Investor push – Pressure from PE firms to decarbonize their portfolio companies

C. Competitors have stepped up actions

- Top innovator companies have already made Net Zero commitments
- Generics companies have also started setting their aspiration

1. Health and Human Services – A Cabinet-level executive department of the US federal government
2. BRSR - Business Responsibility and Sustainability Report

Source: McKinsey white paper – “Managing the net-zero transition: Actions for stakeholders”
The sustainability journey for companies can take a 5-part approach on the path to net zero

1. Compliance
   - Meeting regulator reporting standards

2. Brand & reputation risk
   - Taking measures to protect license

3. Resource productivity improvements
   - Achieving efficiencies in operations

4. Value creation through sustainable portfolio
   - Shifting portfolio to create new value and competitive advantage

5. Sustainability-driven
   - Anchoring the company culture & business model in sustainability
Other industries have started using Decarbonization as a source of differentiation and growth

1. Sign up captive demand before scaling
2. Secure a cost advantage before Green premiums increase
3. Assess technological pathways for both maturity and performance at scale
4. Proactively create business ecosystems
5. Secure low cost of financing

Source: McKinsey white paper – “Making supply-chain decarbonization happen”
There is value to both the planet and Life Sciences companies from decarbonization.

- **Improved financial performance**
- **Improved operational performance**
- **Increased value for patients and customers**
- **Capabilities built internally and externally**
Objectives for today

**WHY NOW – Trends on decarbonization for Pharma companies**

**WHAT IS INVOLVED and WHAT WILL IT TAKE**

**WHAT CAN YOU DO to act now and accelerate your journey to net-zero**
Companies can think about Decarbonization in 3 steps

**Ambition & investments**
Define ambition level fit, considering risks, benefits and costs

**Roadmap & launch execution**
Initiate planning on low carbon sourcing, circular business models, and sustainable product design

**Operationalize & sustain the change**
Define the right governance, build capabilities and processes, incentive mechanisms
~75%+ of emissions for Pharma players are Scope 3 (in the value chain), and ~50% are from purchased goods and services

Emission Profile Based on 38 Life Sciences Players – Normalized by Revenue

GHG emissions by source, based on CDP emissions data, % of total

<table>
<thead>
<tr>
<th>Source</th>
<th>Scope 1 &amp; 2</th>
<th>Scope 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased goods &amp; services</td>
<td>49%</td>
<td>6%</td>
</tr>
<tr>
<td>Capital goods</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>Fuel- and energy</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Transport &amp; distribn.</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Waste from operations</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Business travel</td>
<td>&lt;1%</td>
<td>11%</td>
</tr>
<tr>
<td>Employee commuting</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>Upstream leased assets</td>
<td>3%</td>
<td>16%</td>
</tr>
<tr>
<td>Direct emissions</td>
<td>&lt;1%</td>
<td>3%</td>
</tr>
<tr>
<td>Utilities</td>
<td>&lt;1%</td>
<td>3%</td>
</tr>
<tr>
<td>Transport &amp; distribn.</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Use of sold products</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>End-of-life treatment</td>
<td></td>
<td></td>
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</tbody>
</table>

Scope 3 – Upstream activities

Scope 1

Scope 2

Scope 3 – Downstream activities

Source: Company data, Catalyst Zero, CDP

1. Baselining is made using available data using Spend based data, Consumption based data, Activity based data. Data is automatically ingested from ERP and other business systems. Note: Scope 1 and 2 emissions are provided as single totals by CDP. Scope 3 emissions with negligible emissions or insufficient peer data have been omitted.
For Pharmaceutical companies, ~60% of emissions can be abated at near-zero cost cumulatively by 2040.

<table>
<thead>
<tr>
<th>NPV Positive levers</th>
<th>Abatement potential (% of total CO$_2$e)</th>
<th>Abatement cost (USD/tCO$_2$e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>~33%</td>
<td></td>
<td>~-50</td>
</tr>
<tr>
<td>Cumulative NPV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral levers</td>
<td>~57%</td>
<td>~0</td>
</tr>
<tr>
<td>Cumulative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>all levers</td>
<td>~90%</td>
<td>~100</td>
</tr>
</tbody>
</table>

The Marginal Abatement Cost Curve (MACC) breaks down relevant levers for decarbonization with associated cost and abatement.

Marginal abatement cost curve (MACC), costs projected to 2040

Abatement cost \(^{1,2}\) to 2040, USD/t\(\text{CO}_2\text{e}\)


1. Selection of abatement levers (non-exhaustive list); calculated as LCOP delta between from and to technologies from 2022 to 2040

\[^{1}\text{Non-exhaustive}\]

\[^{2}\text{Cumulative abatement cost}\]

\[^{3}\text{Unabated}\]
Net zero possible using today’s technology – Niacinamide example

**Niacinamide**

6.8 g CO2e/g

1. Outside in bottom-up calculation of CO2e footprints

Source: McKinsey analyses
Mapping the portfolio identifies the CO2e hotspots along and across value chains, and helps identify the most impactful ‘hotspots’

Sanitized client example, scope 3 emission baseline of >5 Mt CO2e

Digital Twin is used to extract the “CO2e hotspots” across entire materials portfolio and, thus, prioritize abatement levers for maximum impact

Only 3 value chain partners could provide a ~35% CO2e abatement across the portfolio
Demand for CO2e abatement will outpace supply significantly over the next 5-10 years

Emissions reduction in European industrial production,
Million tons CO$_2$e, 2021 vs. 2030

**Demand**
for GHG$^1$ abatement based on company commitments

**Supply**
of GHG abatement$^2$

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<table>
<thead>
<tr>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>535 All at &quot;1.5°C trajectory&quot;</td>
<td>50-150 Current industry targets and commitments</td>
</tr>
<tr>
<td>350</td>
<td></td>
</tr>
</tbody>
</table>

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1. Greenhouse gas
2. Excluding targets set for buildings and transportation, including increased supply of recycled materials

Recap: What will the decarbonization journey take?

**Ambition & investments**
Define ambition level fit, considering risks, benefits and costs

**Roadmap & launch execution**
Initiate planning on low carbon sourcing, circular business models, and sustainable product design

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WHAT CAN YOU DO to act now and accelerate your journey to net-zero
Leaders can prioritize five key actions to win

**Action #1**
Develop a full potential “play offense” strategy for value creation and winning the transition

**Action #2**
Accelerate capital/resource deployment with a PE mindset – hyperscale green businesses AND decarbonize hard to abate assets

**Action #3**
Embed Net Nature Positive in your value creation plans

**Action #4**
Build a new kind of partnership and ecosystem muscle (private, public, philanthropy)

**Action #5**
Aggressively reskill yourself, your leadership teams, and your board
How can you tactically get started

**Fitness**
- We begin by focusing on some core muscle groups

**Decarbonization**
- Are you aware of your emissions baseline? How it is split between Scope 1,2 and 3 emissions?

**01**

**02**
- We build habit by doing easy to do exercises (e.g., jogging)

**03**
- We commit by taking up a paid Gym membership

- What are some of the big NPV positive ideas you could implement in next 2 years?

- Are you investing in partnerships with tier-n suppliers to achieve your Long term Decarbonization strategy?
Questions?