BENORI

Sustainability Practices in Pharma Industry

November 2023

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Preface

The pharma industry emitted about 52.0 megatonnes of CO2e, which was more than the 46.4 megatonnes of CO2e generated by the automotive sector in the same year.

Formerly, the pharma industry did not express significant concern about the climate-related implications of their value chain. They primarily focused on bringing drugs to market, ensuring precise storage conditions, and adhering to stringent regulatory standards to uphold quality assurance.

But with the change in global dynamics, and evolving expectations from investors, consumers, and regulatory bodies, ESG has emerged as a vital focus for the pharma industry. The pharmaceutical industry may have been late to the ESG and sustainability movement, but it is progressing by incorporating sustainable practices across the value chain.

To cater to this ever-increasing demand to become green, the industry is coming together to reduce their carbon emissions and collaborating on various fronts. One of them is the Energize Program, led by Schneider Electric in which pharma companies invite their suppliers to participate and learn about renewable energy adoption and contracting. This opportunity allows the suppliers to participate in the market for power purchase agreements. In turn, participating companies will reduce their scope 3 emissions. The participating companies include Amgen, AstraZeneca, Biogen, Boehringer Ingelheim, Bristol Myers Squibb, Charles River Laboratories, Chiesi, GSK, Johnson & Johnson, Merck, Merck KGaA Darmstadt Germany, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Takeda, Teva, UCB.

Impact: (as of November 2022)

> 369	22	>115
supplier companies registered	terawatt hours of electricity demand	educated on RE procurement

In this report, we will understand other initiatives taken by major pharma companies across the world to create a sustainable supply chain.

Executive Summary

Supplier Sustainability Program

Johnson & Johnson has a comprehensive Sustainable Procurement Program, which includes guidelines for suppliers to promote responsible sourcing, environmental impact reduction, and ethical labor practices.

SOURCING

Pharma companies are **making joint efforts** for sustainable sourcing by engaging in programs like Energize. Additionally, the companies are enhancing their approach by incorporating strategies like local sourcing, identifying and establishing standards for critical raw materials.

Yield Increase With Green Chemistry

Takeda uses green chemistry for one of its molecules and the new manufacturing process results in

- **78%** less waste
- **93%** less usage of organic solvent
- **46%** less water
- Yield increase from **35% to 56%**

MANUFACTURING

The first step pharma companies took towards their sustainability goals was **investing heavily in renewable energy.** This has led to the **fastest reduction in scope 2 emissions**. Biogen has been 100% renewable since 2015 whereas Astrazeneca, and Novo Nordisk have over 80% of purchased electricity from renewable sources. Other initiatives include **continuous manufacturing and using green chemistry.**

Decrease In Plastic Content

GSK initiated a process to **decrease the plastic content** in **80,000 Advil bottles by 20%** using resin technology, all while retaining the same barrier properties. This effort was projected to result in a reduction of nearly 500,000 pounds of plastic in the environment.

PACKAGING

The **shift** towards sustainable packaging in this industry **is relatively slow** since the need for such packaging to meet the **stringent quality standards are considerably more demanding than most other industries**. Major companies are currently using recyclable plastics to contribute towards sustainability.

Saved Emissions In Logistics

NOVARTIS has managed to **prevent** an annual average of **18,000 shipments** through consolidated medication deliveries, since 2021 resulting in a yearly **reduction of** approximately **1,400 tonnes of** CO_2 emissions.

LOGISTICS

Firms are trying to reduce their shipments while **increasing the container occupancy, switching to sea freights and using biofuels for transportation.**

Recovery And Recycling Schemes

Chiesi set up and funded a Take AIR (Action for Inhaler Recycling), a 12-month pilot postal scheme to recover and recycle inhalers. Between 2021 and 2022, **20,049 inhalers were returned**; and it avoided the equivalent of **~119.3 tonnes** of CO_2 emissions.

POST-CONSUMER USE

This **space is at a nascent stage** and only a few companies have launched initiatives such as take-back programs and collection & disposal of expired medicines to minimize the ecological damage. **Novo Nordisk has joined hands with Eli Lilly, Sanofi, and Merck to recycle injection pens.**

Companies are making substantial investments in various strategies to enhance the sustainability of their procurement processes:

Regularly assessing suppliers and issuing certifications, such as those from EcoVadis (rating firm) to evaluate and ensure supplier sustainability**.**

Becoming **transparent** about their sourcing partners and countries and identifying the **high-impact raw materials and developing standards to minimize climate risk**.

Prioritizing **local sourcing** as it helps reducing transportation-related environmental impacts, conserving resources and fostering better ecological and community relationships.

Initiatives

Assessing Suppliers Regularly

- GSK piloted science-based targets for nature (SBTN) in its supply chain. They used SBTN's **high-impact commodities list, categorized materials into segments and mapped supply chains with the help of an expert.**
- GSK established **sustainability standards for top 30 ingredients and suppliers**, testing their suitability across various supply chain scenarios.

Identifying the high-impact raw materials

- AstraZeneca has prepared the first-ever **online map highlighting countries of major direct partners** for transparency.
- It collaborated with the **Pharmaceutical Supply Chain Initiative (PSCI) to identify high-risk raw materials.**
- The company has a commitment to have **action plans for 12 materials** by 2025.

Prioritizing local sourcing

- Dr. Reddy's has focused on **local sourcing.**
- Suppliers' sites assessment through a third party and categorization into **high, medium, and low-risk suppliers.**
- Based on an ESG audit ranking of **99 suppliers assessed, no supplier was tagged to the high-risk category** from FY2018 to FY2021.

Companies are making substantial investments in various strategies to enhance the sustainability of their manufacturing processes:

Incorporating the technique of **continuous manufacturing** to reduce energy consumption and waste.	Using **green chemistry practices** for drug discovery, development, and manufacturing.	Fulfilling their energy requirements through **renewable energy** sources.	Establishing **wastewater treatment facilities.**
GSK, Novartis, AstraZeneca, Bayer, Merck, Pfizer	Johnson & Johnson, Abbott, Centrient Pharmaceuticals, Amgen, Takeda, Merck	AstraZeneca, Sanofi, Janssen, Novo Nordisk, Amgen, Biogen	Merck, Novartis, Centrient Pharmaceuticals, Johnson & Johnson, Amgen

Initiatives

Continuous Manufacturing

- AstraZeneca has invested significantly in the **continuous manufacturing process for APIs** as it offers **enhanced sustainability performance** when compared to batch processing.
- It **optimizes energy usage, minimizes waste, reduces transportation emissions and costs**, and provides **versatile tracking options**, making it a sustainable and cost-effective approach.

Green Chemistry

- Centrient Pharmaceuticals has introduced PureActives, an innovative **enzymatic platform** that simplifies the production of antibiotics by replacing the traditional methods which involves a complex 13-step process.
- This eco-friendly technology **reduces energy and water consumption, eliminates harmful solvents, and enhances product quality.**

Renewable Energy Sources

- Janssen Pharmaceuticals, affiliated with J&J, is committed to renewable energy. Their Titusville, NJ facility achieved LEED Gold certification in 2004, maintaining it in 2014. It relies on a **5.1 MW sun-tracking solar panel array for 85% of its electricity and has efficient water measures**.

Wastewater Treatment Facilities

- Centrient Pharmaceuticals has implemented **advanced wastewater treatment facilities** across its global sites and **created tests for assessing antibiotic activity in wastewater streams**, resulting in a supply chain that is entirely clean while being compliant with the PNEC discharge targets (*the amount of an antibiotic in water that is so low that it's unlikely to cause harm to the environment*) set by the AMR (Antimicrobial Resistance) Industry.

Companies are at the early stages of developing sustainable packaging solutions for their products and have introduced initiatives like:

Replacing plastic by **using resin technology** that provides the same protective properties as plastic while using less material.

GSK

Replacing the GC2 cardboard that is made from mechanical pulp with **GD2 cardboard made from recycled wood pulp**.

Pfizer

Phasing out plastic entirely from the packaging of select products where it is feasible.

GSK

Initiatives

GSK

Resin Technology

- GSK Consumer Healthcare is **reducing plastic in over 80 million Advil bottles by 20%**, cutting nearly 500,000 pounds of plastic waste from the environment.
- They are using an innovative **resin technology that will replace plastic as it maintains barrier protection properties** while reducing material usage in the bottles.

Recycled GD2 Cardboard

- Pfizer Germany adopted eco-friendlier **GD2 cardboard for Norvasc packaging due to its lower environmental impact** in terms of energy, water use, and carbon emissions compared to GC2 cardboard.
- Minimal changes in appearance and **manageable dust formation make GD2 a sustainable choice** for pharmaceutical packaging.

Pfizer

GSK

Eliminating Plastic

- GSK's vaccines division has **ceased the use of PVC blisters in packaging pre-filled syringes** and is actively **eliminating the plastic film wrapping** utilized for pallets.

Companies are increasingly focused on making their logistics more sustainable by using methods like:

Investing in more **efficient cold chain logistics** to reduce energy consumption and waste in the transportation of temperature-sensitive products.

Pfizer

AMGEN

Replacing HDPE drums with **corrugated boxes.**

CENTRIENT Pharmaceuticals

Using **sea transport over air transport** for reduced greenhouse gas emissions, and lower fuel consumption.

Johnson & Johnson

Lilly

AstraZeneca

SANOFI

MERCK

Adopting biofuel in logistics.

novo nordisk

Initiatives

Cold Chain Optimization

- At Pfizer's logistics center in Memphis, Tennessee, the company **reduced the environmental impact of cold chain shipping by replacing single-use Styrofoam containers with reusable ones**.
- This change has resulted in a **90% reduction in packaging waste sent to landfills** by customers.

Recycled HDPE with Corrugated Boxes

- Centrient has initiated 'Pack Smart' initiative, **replacing high-density polyethylene (HDPE) drums with corrugated boxes**.
- This change **lowers carbon and water footprints, reduces storage space requirements**. This leads to energy savings during cooling and transportation and promotes the circular economy by using approximately **70% recycled paper in box production**.

Switching To Sea Freight

- Sanofi's transportation strategy aims to ensure **continuous drug and vaccine supply to patients** while minimizing the environmental impact.
- Its transportation department **has opted for sea over air freight for long distances, maximizing truck and sea container occupancy.**

Biofuel Adoption

- Novo Nordisk has teamed up with a shipping company to prioritize **eco-friendly pharmaceutical transportation**, encompassing ocean services and inland logistics. The use of **sustainable biofuel to power select vessels contributes to a reduced carbon footprint in Novo Nordisk's transportation**.

Companies are striving to enhance the sustainability of post-consumer use through:

Recycling **injection pen devices**

Expired medication takeback programs.

Initiatives

Recycling Injection Pens

- Novo Nordisk's PenCycle initiative **encourages returning empty, durable pre-filled plastic injection pen devices for recycling**, giving these materials a **new purpose.**
- The company recycled up to 700,000 pre-filled plastic injection pen devices by the end of 2022 and is planning to expand the initiative further.
- Additionally, the company **collaborated with Eli Lilly, Sanofi, and Merck in Denmark**, with the goal of recycling 25% of all injection pens distributed by these four partners within the country.

Mailback Program

- Amgen addresses product end-of-use environmental impact through a **mailback program for products including Enbrel, Neulasta Onpro kit, and Repatha.**
- In 2018, patients returned about 58 metric tons of medical waste, including sharps, autoinjectors, and containers. Recovered material undergoes autoclaving, shredding, and incineration with energy recovery at a waste-to-energy facility.

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