Moving Vaccine Manufacturing and Supply Chain towards Net Zero

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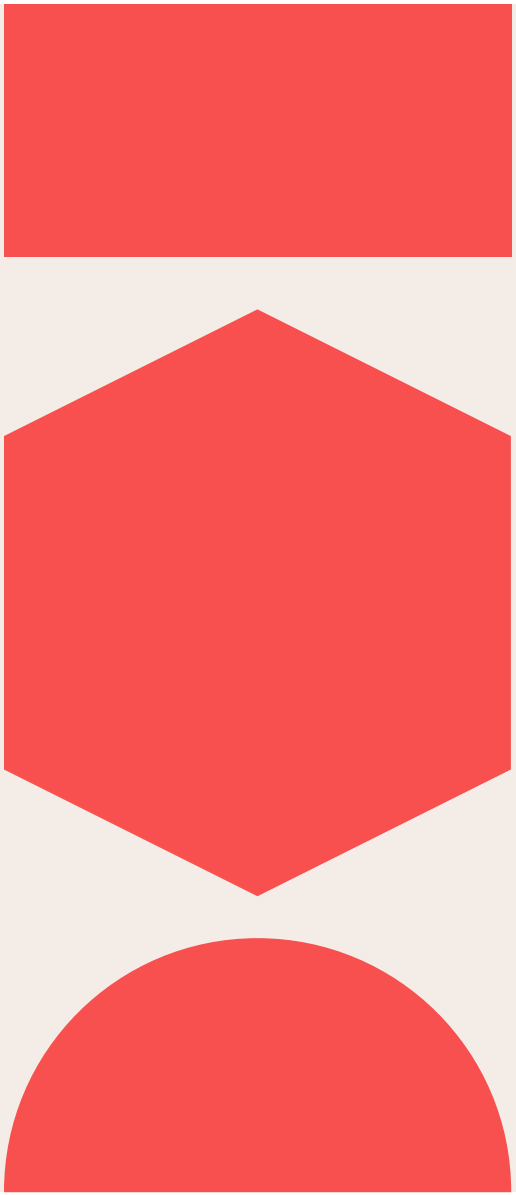
‘Net Zero Energy’ (NZE) is a concept to raise energy efficiency of buildings and processes by reducing energy consumption and waste to the minimum and by generating sufficient renewable energy on-site to offset the consumption of grid electricity (grid-linked).



What is being done?

Regulations

- Taskforce on Climate related Financial Disclosures (TCFD).[1]
- Health Sector Climate Pledge in the US[2]

Global Health x Sustainability Political Momentum:

- Both, the G7 and G20 are integrating Climate and Health in their Health and Finance agenda.
- Unprecedented focus on global health and climate change at UNGA 2023. [3]

Investors and Employers

- *Investors:* Life Sciences companies scoring highly in ESG enjoyed a 0.35% lower cost of capital compared to those with lower scores.[4]
- *Employers:* Life Sciences companies are increasingly engaging employees on sustainability agendas and ensuring environmental considerations are part of the decision-making process. [5]

Healthcare Providers

- Increasingly, pharmaceutical tenders have environmental considerations built in [6]

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1. TCFD,2023 , 2 HHS, 2023 , 3 UNDP 2023 and WHO 2023 , 4 MSCI 2020 , 5 AstraZeneca 2022 , 6 Pharmaceutical Technology 2020

Why apply Net Zero?

Vaccine Manufacturing

- Taking India as an example, **our bio-economy has grown from $10 billion in 2014 to $151 billion by the end of 2023.** Indian manufacturers supplied 25% of the vaccines purchased by WHO during COVID-19. [1]
- Energy transition is a must and **the biofuels and circular economy are essential for sustainability of the bio-economy** in the long run
- The scope of **biotechnological advancements is crucial to achieving a carbon-neutral future** for a sustainable and greener planet.

Vaccine Supply Chain

- **Countries suffer from chronic vaccine distribution failures due to irregular and unreliable shipments**:
  - Access to transport is uncertain and poorly planned
  - Vaccine storage conditions are not continuously monitored. [2]
- The **number, volume and value of vaccines and temperature-sensitive medicines is steadily increasing** globally.

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11. BIRAC 2024, 2 NIH 2015 , 3 NIH 2015

What can be done?

Vaccine Manufacturing

Support research into new manufacturing techniques that may produce vaccines with a smaller carbon footprint.

Work alongside regulators to establish and adhere to sustainability standards in vaccine manufacturing.

Transition to bio-based and renewable materials for vaccine production and opt for biodegradable or recyclable packaging solutions to minimize environmental impact.

Shift manufacturing facilities to use solar, wind, or other renewable energy sources to power operation

Adopt zero-waste strategies by recycling materials and finding ways to repurpose by-products from the manufacturing process.

Vaccine Supply Chain

High energy efficiency in storing and delivering vaccines to reduce the recurrent costs of distribution.

Adopting a system of planned vaccine deliveries by dedicated electric vehicle

Solar modules on the roofs of stores linked to the electrical grid could generate enough ‘green’ energy for storage and transport.

‘Green’ distribution systems for vaccines and medicines could meet an increasing need for cooling in public health programs.

PATH for Net Zero

Solarized active-cooling vaccine-carriers (Emvolio) to ensure climate-resilient & sustainable immunization

Learnings from Solarisation of Oxygen Generating Plants (OGPs)

In partnership with WHO and Ministry of Health, Tunisia implemented "Project Optimize" to demonstrate innovative health supply chain solutions

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THANK YOU