



TRENDS AND INNOVATION IN SUSTAINABLE PACKAGING

Biotech and Pharmaceutical
controlled products

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EXECUTIVE SUMMARY

What is the context and some initiatives that could move you forward to have a sustainable packaging solutions in the Bio-pharmaceuticals business.

The agile approach and the financial efficiency in Supply Chain



**Improved
Brand Image**



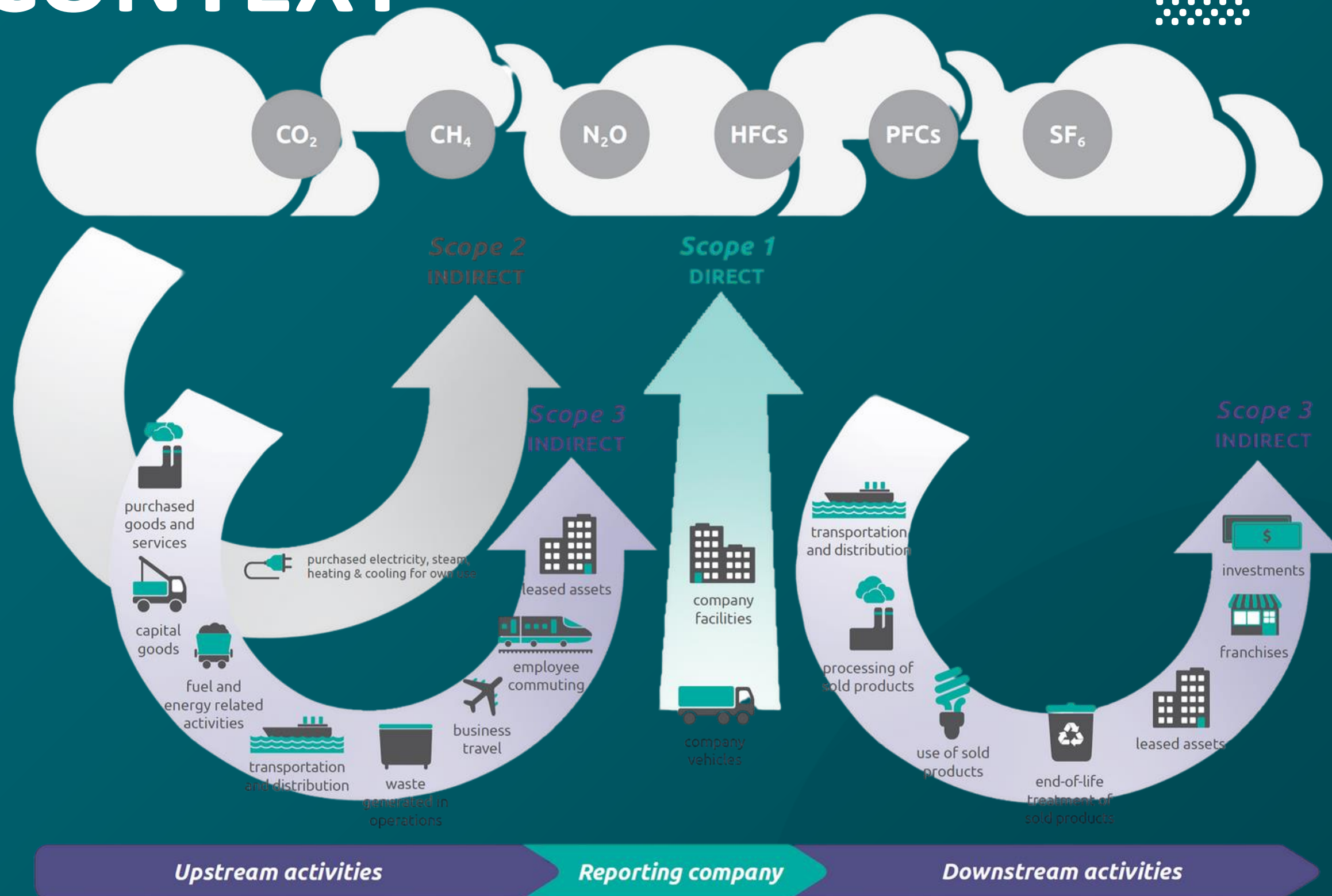
**Supply Chain
efficiency**



**reduced
Carbon
emissions**

SCOPE 3

CONTEXT



CONSTRAINTS VS SOLUTIONS

Introduction of eco-friendly packaging materials



Recyclable
Alternatives



Biodegradable
Plastics

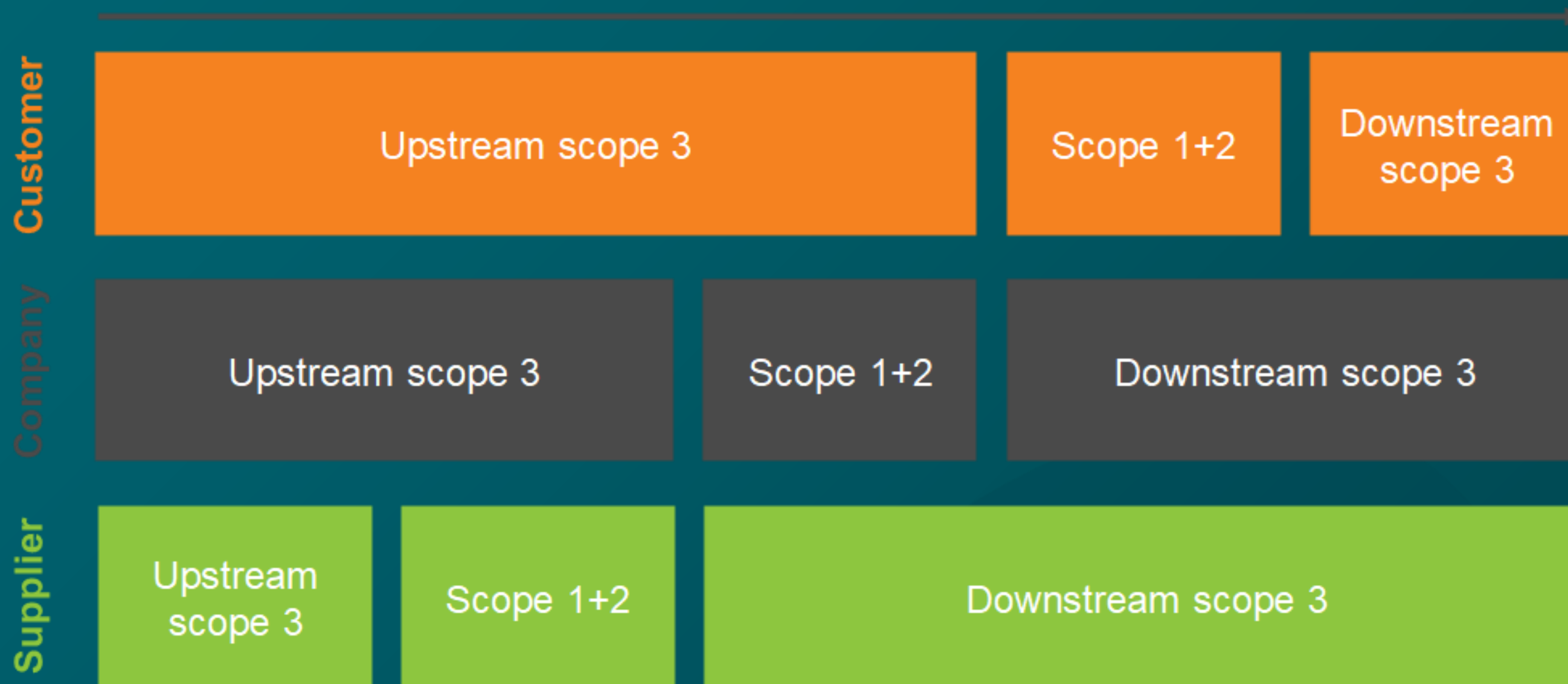


Plant-based
Materials

- Temperature-sensitive pharmaceuticals require strict thermal stability.
- Importance of Sustainable Packaging Regulatory Compliance: EU Green Deal, FDA, WHO guidelines. Environmental Considerations: Reducing carbon footprint.

Cost Factors: Balancing investments with long-term savings. • This presentation explores material innovations, environmental benefits, and cost implications.

Contributors to emissions



The Supply Chain ~~OPPORTUNITY~~

A significant part of the game is played within the SC scope and mainly:

- The Sourcing of materials and components (Vendor localization and selection)
- Deployment Parameters* determines Frequency of Replenishment
- The Inbound deliveries and storage, the Outbound distribution
- The Type of Materials (Plastics, Paper, etc.)
 - The Size
 - The Safety Stock
 - The Shelf Life
 - The Shipping and Storage Temperature



Sourcing and Frequency of
Replenishments



Transports and Storage/
Inventory

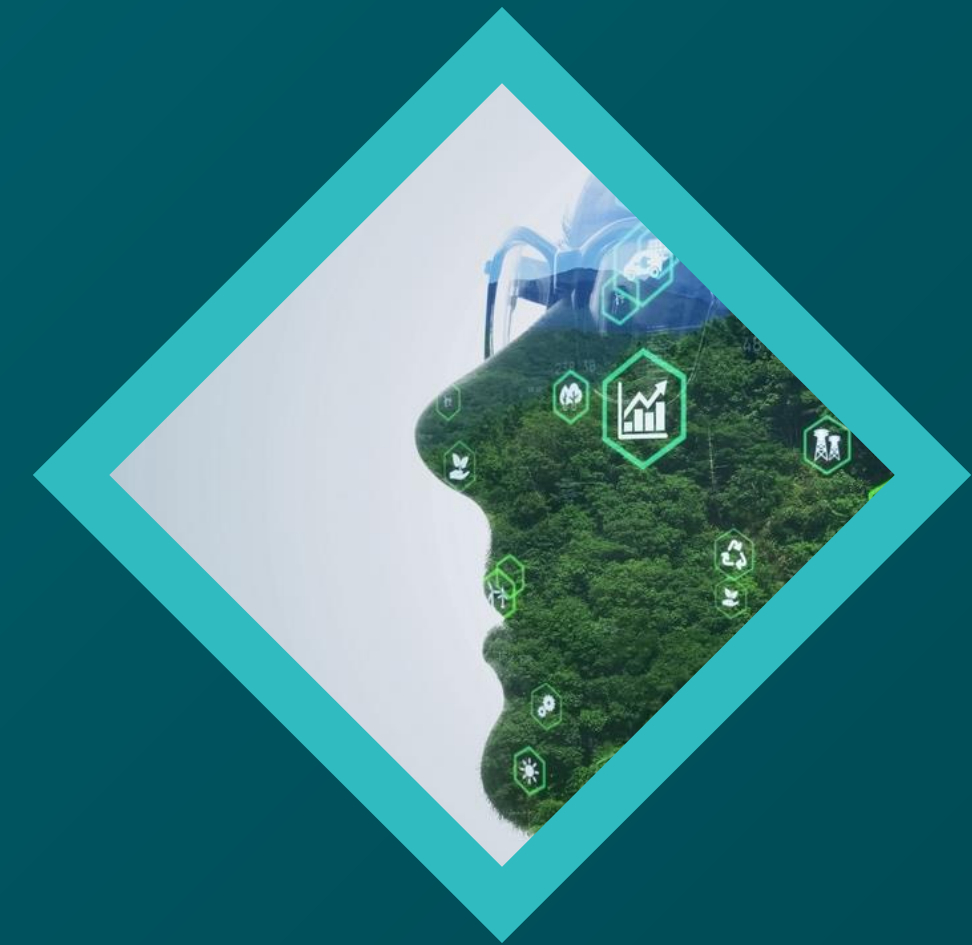
*EOQ by Product /Material Type



Improving Business via SUSTAINABLE PACKAGING

The [ecotransit.org](https://www.ecotransit.org) website provides conversions and calculations of equivalent CO2 emissions vs Transportation

An average cost of Carbon/ton is available on the ETS and correspond to less than 100 eur /ton (it's dynamic)



Cost impact of Carbon emissions

+



Cost of Stock, Purchasing (Scale Prices), Movements



Figura 3: Prezzi di aggiudicazione delle vendite all'asta di quote di emissione generali (1° gennaio 2022 - 30 giugno 2023)



The Balance of Efficiency

Reducing inventory might increase the frequency of deliveries then the Carbon Emissions;

On the contrary a higher stock will reduce the frequency but immobilize the Capital and increase risks of scraps/write off.

Also Production Costs may be increased by reducing Inventory

The Optimal function



Minimizes the costs of Production/Inventory (Stock)/ Distribution Transportation + Carbon Emissions for Outbound

Minimizes the cost of Procurement/Receipts/Storage + Carbon Emissions for Inbound



IMPLEMENTATION PLAN

Conceptual Design should be based on available and affordable **assets or resources.**



Selection of materials follow same approach plus the Regulatory change registration and stability (glass/plastics)
Agile methods and stakeholders engagement



Business Case Approach

➤ Design in House	\$ 20.000
➤ RA Assessment	\$30.000
➤ Change Control	\$15.000
➤ Equipment Upgrade	\$300.000
➤ Inventory Loss	\$30.000

Savings/year

Freight Costs

*out of reducing size of packaging

- 1 mln

Storage and Material Costs

- 20 %

Plastic avoidance

- 200 Tons

CO2 Emissions

*scope 3 outbound

- 30%

*figures are for example only

CONCLUSION

Sustainable Packaging deserves a medium long term strategy and little step implementation with some quick wins.

Materials have to be challenged vs Product type and GMP/Regulatory aspects

Take Away:

Efficient supply chain management leads to more **sustainable supply chains** for the biopharmaceuticals industry.





THANK YOU FOR YOUR ATTENTION



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Switzerland

