

Examples Aspect – Impact – Life Cycle for Glass Bottle Manufacturing

Life Cycle Stage	Process / Activity	Environmental Aspect	Environmental Impact	Category (Climate / Pollution / Resource / Biodiversity / Ecosystem)	Apply Company own criteria for Significant Aspect	Controls	Improvement Actions
Raw Material Acquisition	Sand, soda ash mining	Land disturbance, resource extraction	Habitat destruction, depletion of natural resources	Resource / Biodiversity / Ecosystem		Supplier evaluation, regulated sourcing	Use recycled glass (cullet) to reduce mining
Raw Material Acquisition	Transport of raw materials	Fuel consumption and emissions	Carbon emissions contributing to climate change	Climate Change		Efficient logistics planning	Use low-emission transport options
Design & Production	Furnace operation (melting glass)	High energy use, CO ₂ emissions	Air pollution and high carbon footprint	Climate / Pollution		Energy-efficient furnaces	Shift to renewable energy sources
Design & Production	Scrap and defective bottles	Solid waste generation	Resource inefficiency and land pollution	Resource / Pollution		Internal recycling (cullet reuse)	Improve quality control to reduce rejects

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Transportation & Delivery	3rd-party logistics (distribution)	Carbon emissions from transportation	Climate change and air pollution	Climate Change / Pollution		Outsourced logistics standards	Select eco-friendly logistics providers, optimize routes
Use Phase	Consumer handling/use	Breakage of bottles	Waste generation, potential injury, resource loss	Resource / Pollution		Product durability design	Improve bottle strength, encourage reuse
End-of-Life Treatment	Recycling of glass bottles	Energy use in recycling process	Reduced raw material extraction but some emissions	Resource / Climate		Recycling programs	Increase recycling efficiency
Final Disposal	Post-consumer glass/plastic waste (caps/labels)	Landfill waste and improper disposal	Land pollution and long-term environmental burden	Pollution / Ecosystem		Waste management awareness	Promote circular economy and waste collection systems