

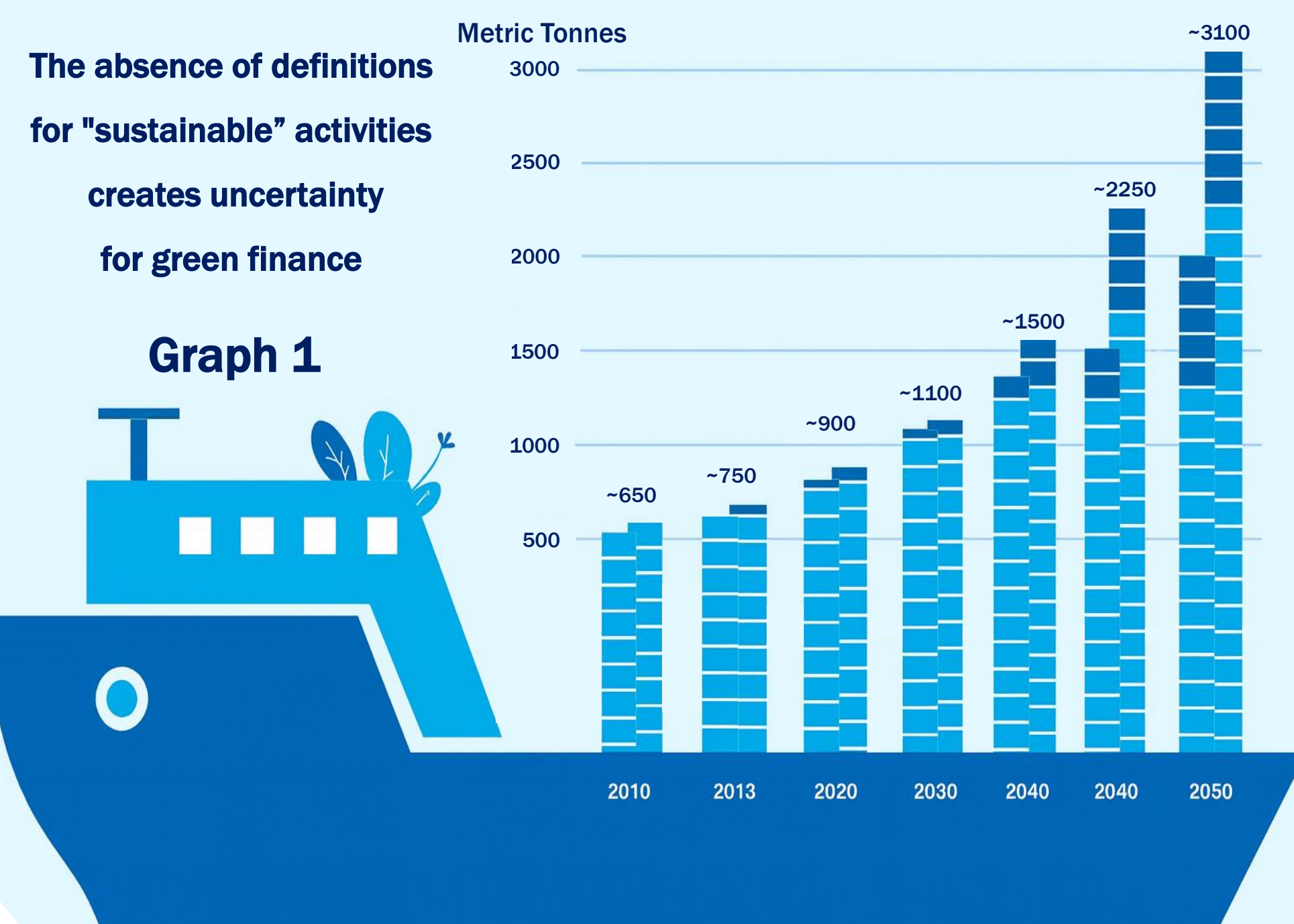
CHALLENGE

Health Crisis: Diesel-fueled port operations are linked to cancer, asthma, and heart disease, affecting workers and near-port communities

Regulatory Pressure: The IMO mandates a **40%** carbon intensity reduction by 2030 and net-zero GHG emissions by 2050

Increase in CO2 emissions if unsupervised **2-3% → 17%**

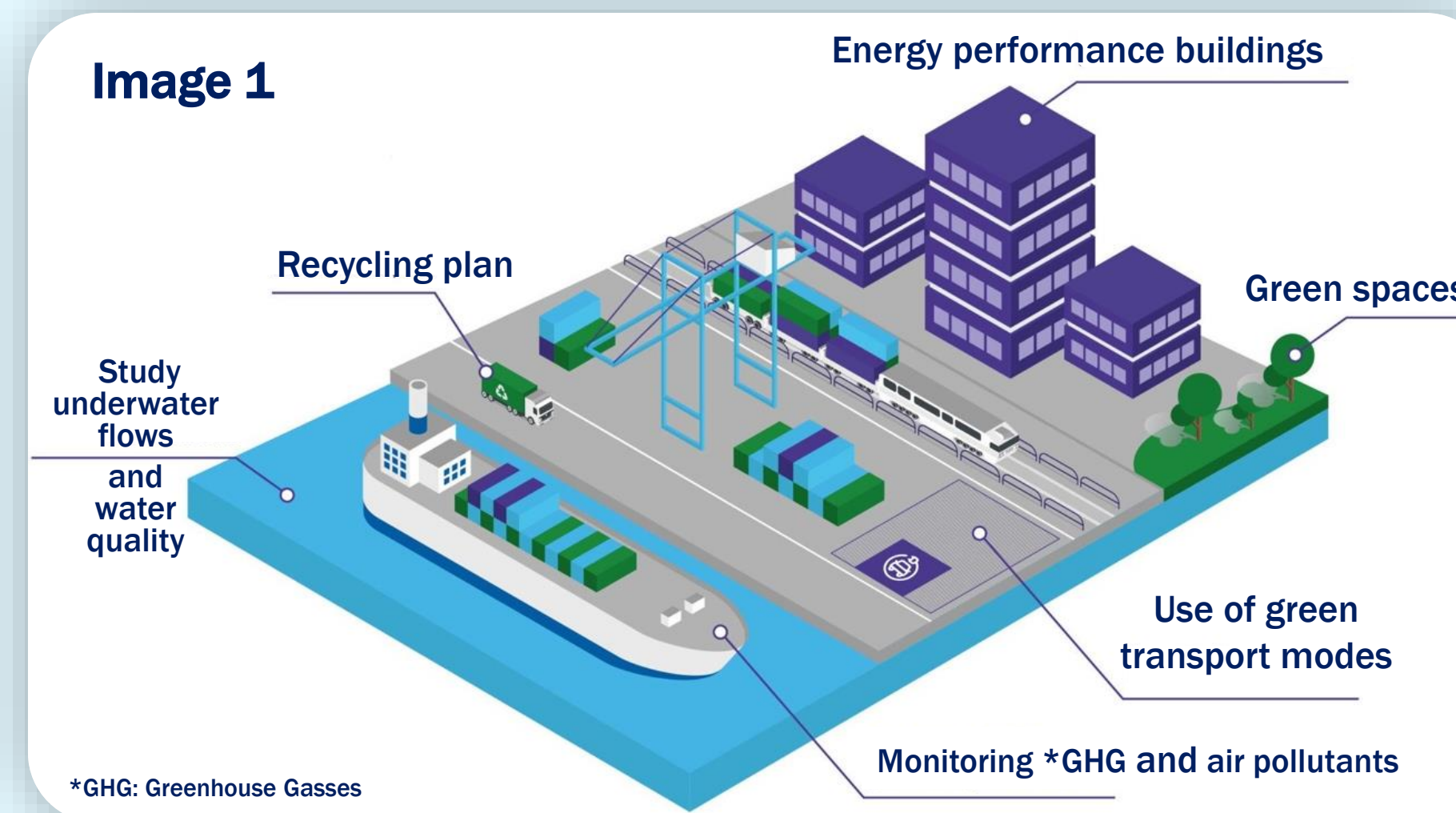
Projected Global CO2 emissions from the shipping sector



SOLUTION

*"Charter a Course
Where a Port's Greatest Asset
is The World it Serves"*

Key Strategy: Port Electrification



- **On-Shore Power Supply (OPS):** Adapt OPS for vessels with new sustainable technology to plug into the local grid eliminating engine emissions
- **Electric Cargo Handling Equipment (e-CHE):** Replace diesel-powered cranes, forklifts, and tractors with zero-emission electric versions
- **Energy Hubs (EH):** Evolve ports into Energy Hubs that leverage renewable energy systems and battery storage technologies

SUSTAINABLE BENEFITS

\$2.9B
USD

Awarded to 54 US Ports through the Clean Ports Program for Sustainability and Zero Emissions Projects

OPS + e-CHE + EH
On Shore Power Supply = Electric Cargo Handling Equipment Energy Hubs

↓17% **↓92%** **↓98%**
Green House Gas Emissions Diesel Particulates Sulfur Oxides

By San Pedro Bay Ports Clean Air Action Plan

Port Infrastructure Development Program

\$450M
USD

Annually available to develop U.S. Port's Strategic Support Infrastructure

SOURCES



EXECUTIVE SUMMARY



MEET THE TEAM



Port & Profit: "The Economic Imperative of Zero Emission Ports"

Cindy Becerra, Elieser Castellanos & Mariela Juarez

Faculty Advisor: Margaret Kidd

University of Houston

Industry Advisor: John Hark, Peter Jessup & Jake Swanson

