



*The future concept for
self-sustainable ports.*

PORTZERO

AGENDA

01

INTRODUCTION

02

MAIN PROBLEMS

03

ALTERNATIVE SOLUTIONS

04

CONCLUSIONS



01 - INTRODUCTION

WORK TEAM

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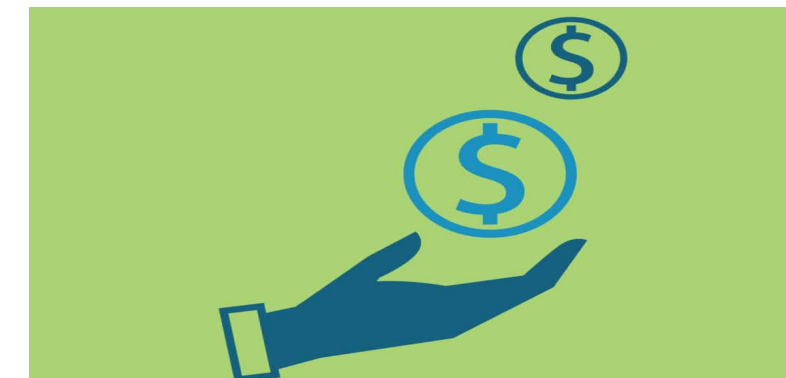
Road freight emission will be growing by a third, and shipping emissions growing by between 50% and 250% from 2012 to 2050.

90% of global trade is transported through the sea.

GREEN INDUSTRIAL REVOLUTION

**Innovation is key to
developing green
technologies and
tackling climate change.**

**Net Zero Innovation
Portfolio
- 1-billion-pound fund**



02 - MAIN PROBLEMS

In ports and terminals

MAIN PROBLEMS IN PORTS AND TERMINALS

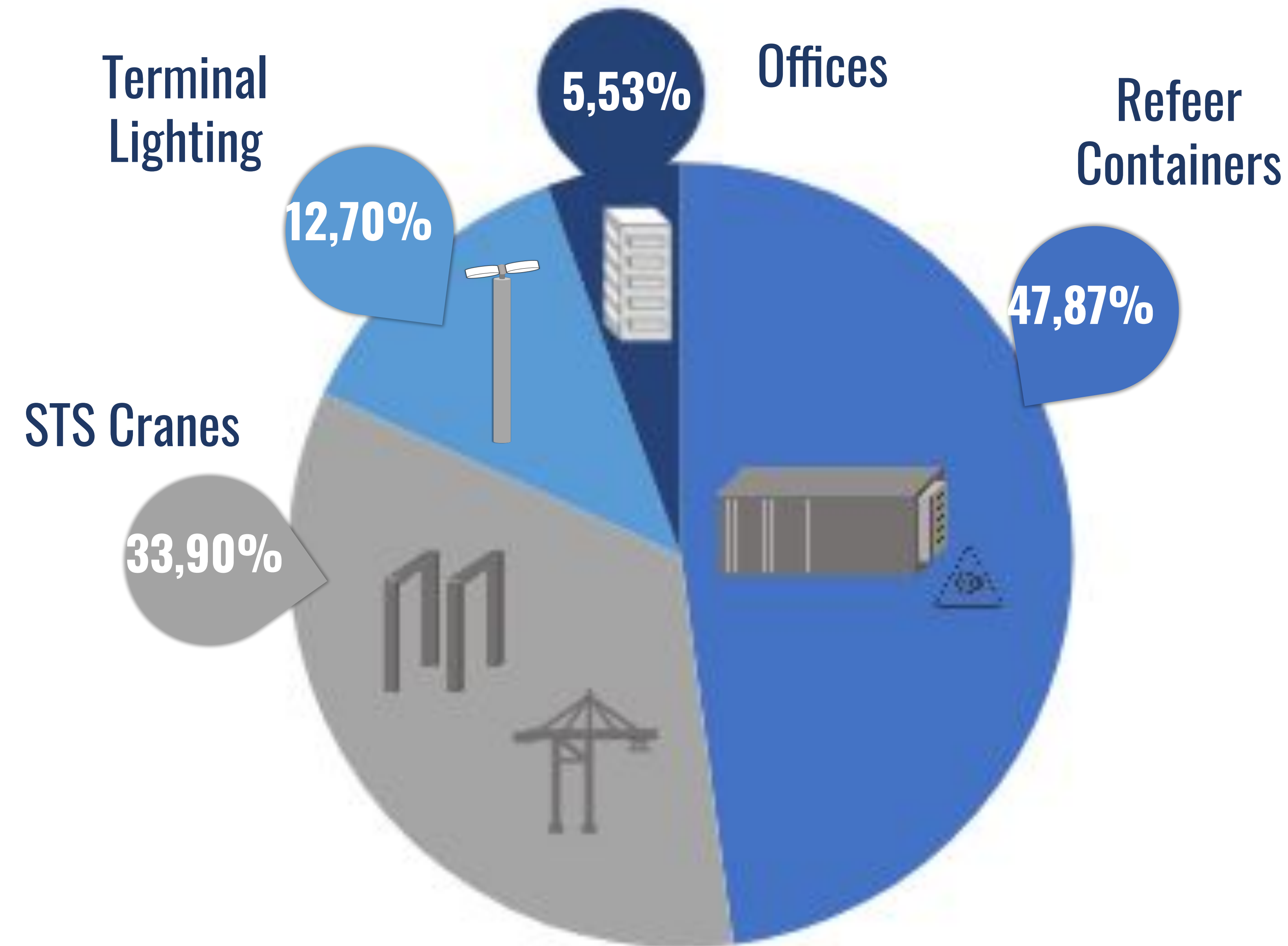


INTER-TERMINAL

24 Operates 24 hours

↑ Energy consumption

PORT ENERGY DEMAND DISTRIBUTION



**THIS REPRESENTS
HIGH
CONSUMPTION LEVELS IN
THESE TWO PROCESSES**

TECHNOLOGICAL INFRASTRUCTURE LIMITATION



Cartagena



Buenaventura



Barranquilla



Santa Marta

THEY HAVE PROBLEMS WITH:

- MACHINERY UPDATE

- EQUIPMENT MAINTENANCE

MAIN PROBLEMS IN PORTS AND TERMINALS



INTER-TERMINAL

24 ↑ Operate 24 hours

↑ Energy consumption

↑ GHG emissions

MAIN PROBLEMS IN PORTS AND TERMINALS



HINTERLAND



Traditional means of road transport are used



7% of global CO₂ emissions

INTER-TERMINAL



Operate 24 hours



Energy consumption



GHG emissions

MARITIME TRANSPORT



Vessels use fossil fuels



2.5-3% of global GHG emissions

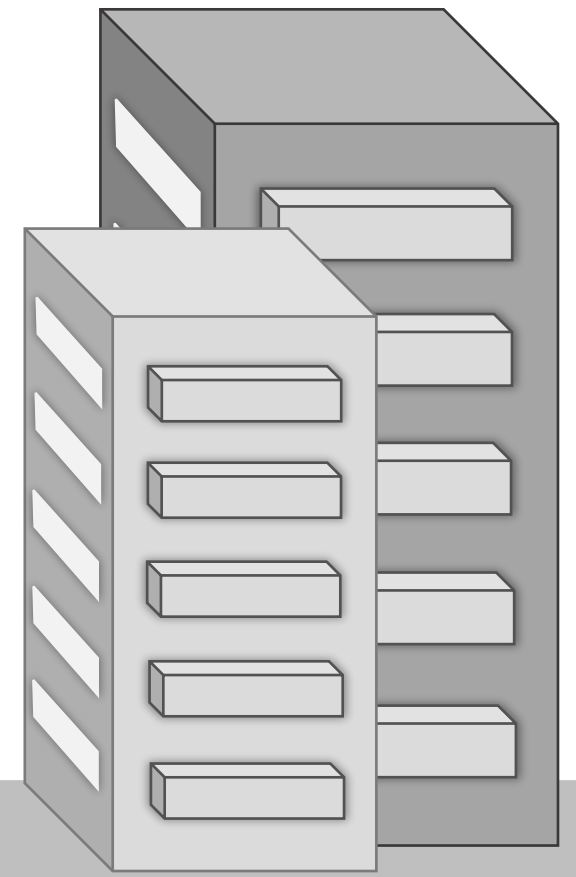
02 – ALTERNATIVE SOLUTIONS

To reduce energy consumption

LOCAL
COMMUNITY

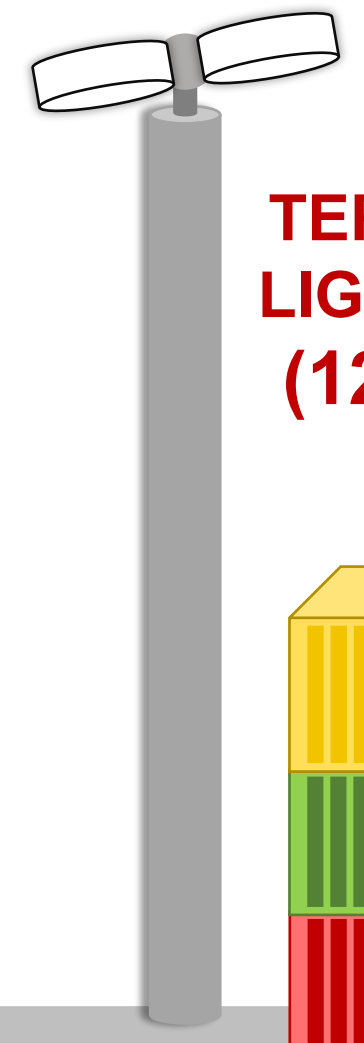


LANDSIDE



OFFICES
(5,53%)

INTER-TERMINAL

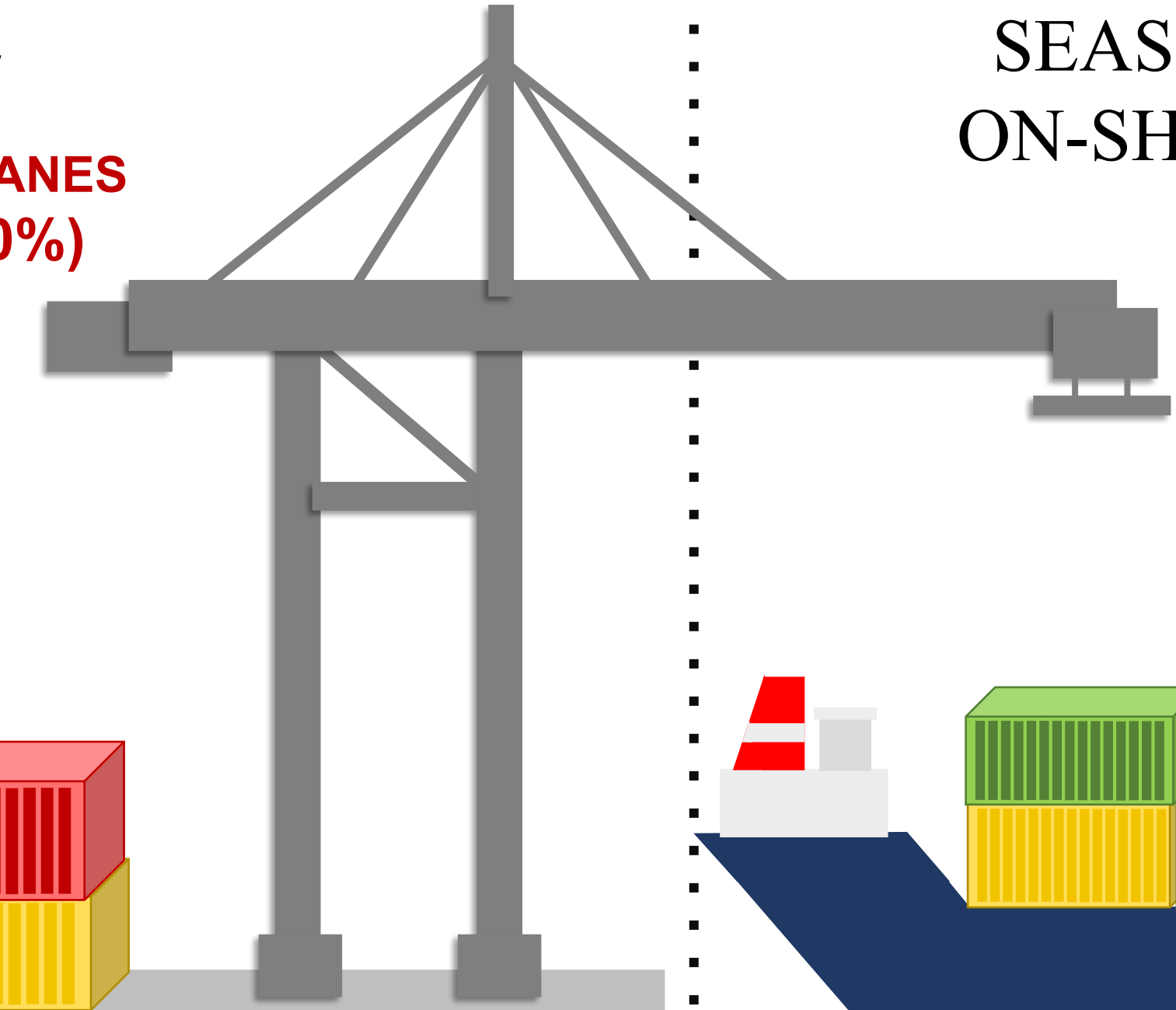


TERMINAL
LIGHTNING
(12,70%)



REFEER
CONTAINERS
(47,87%)

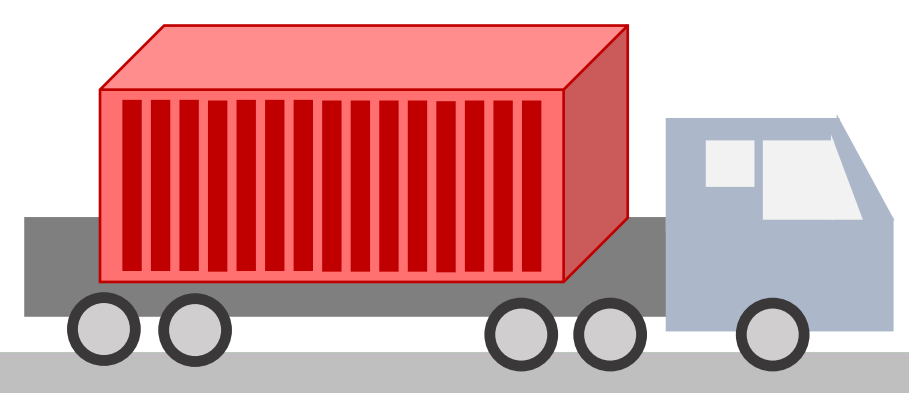
STS CRANES
(33,90%)



SEASIDE
ON-SHORE



NAUTICAL
OFF-SHORE



LOCAL
COMMUNITY

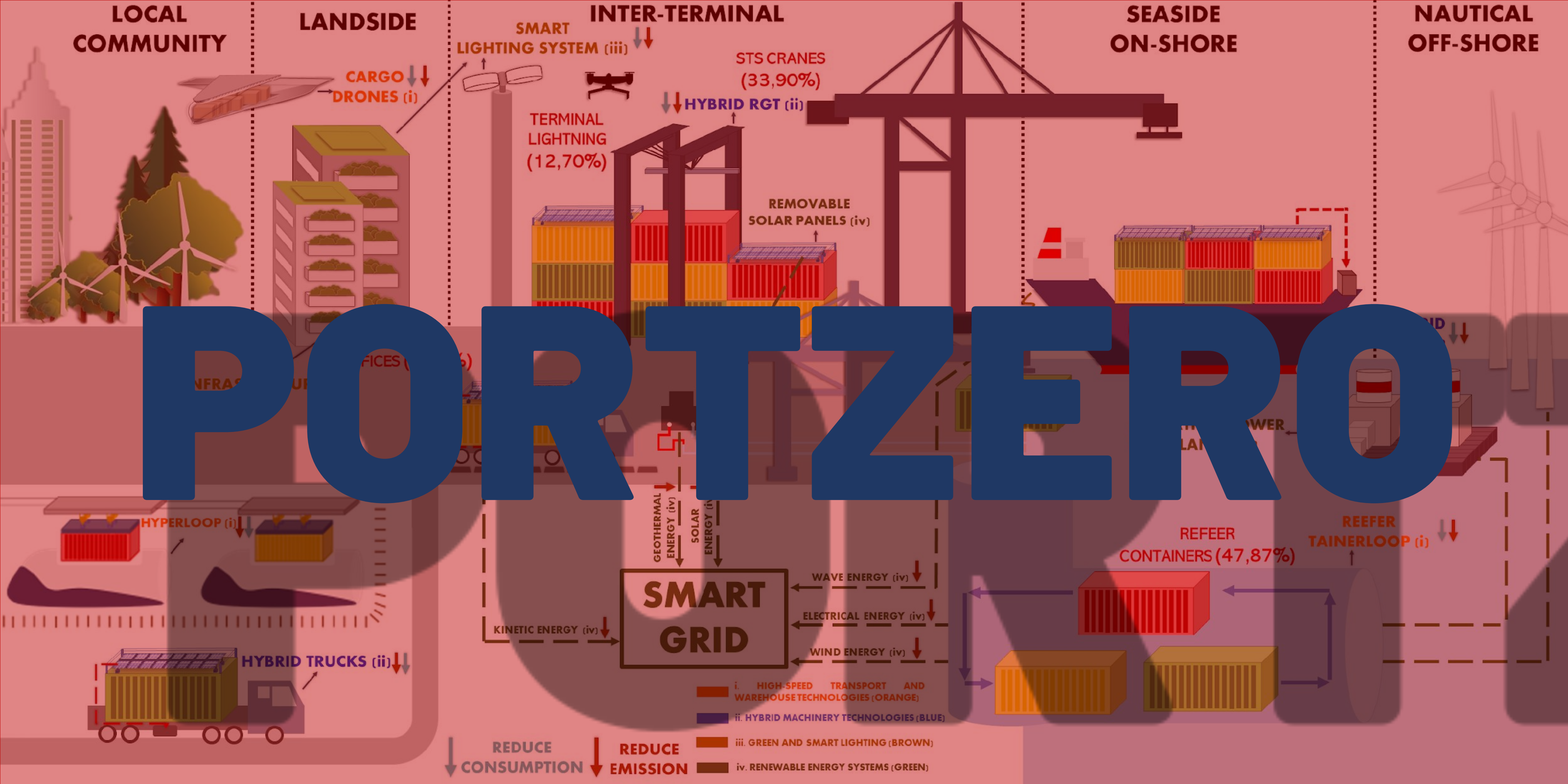
LANDSIDE

INTER-TERMINAL

SEASIDE
ON-SHORE

NAUTICAL
OFF-SHORE

PORT ZERO

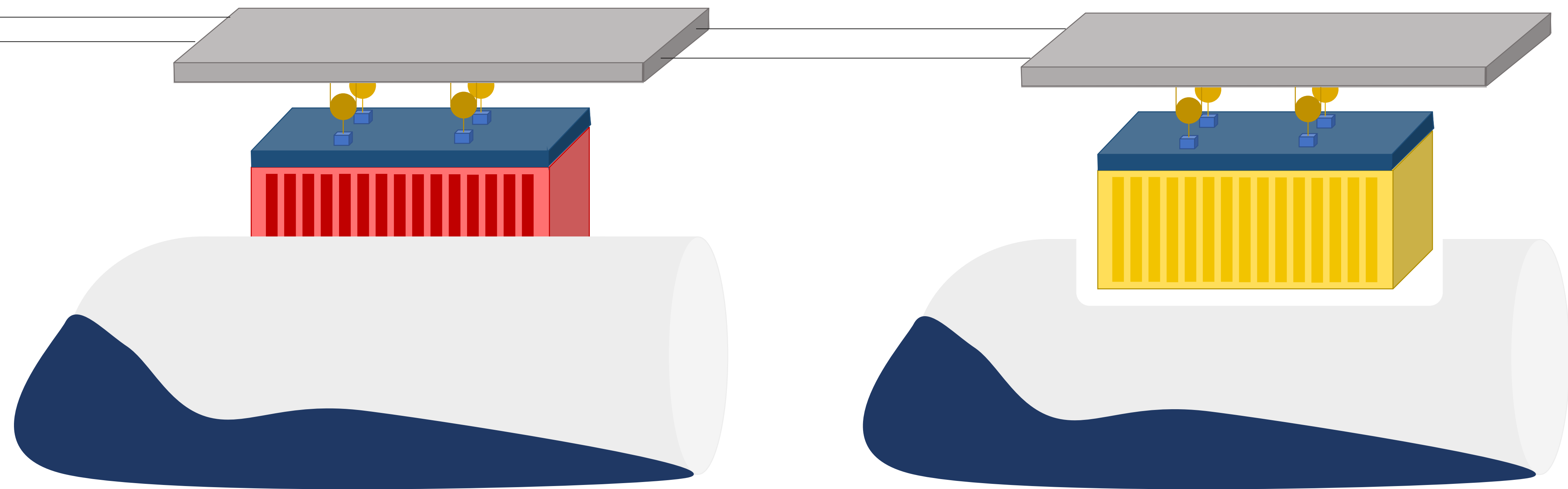




2.1. HIGH-SPEED TRANSPORT AND WAREHOUSE SYSTEM TECHNOLOGIES



HIGH-SPEED TRANSPORT AND WAREHOUSE SYSTEM TECHNOLOGIES

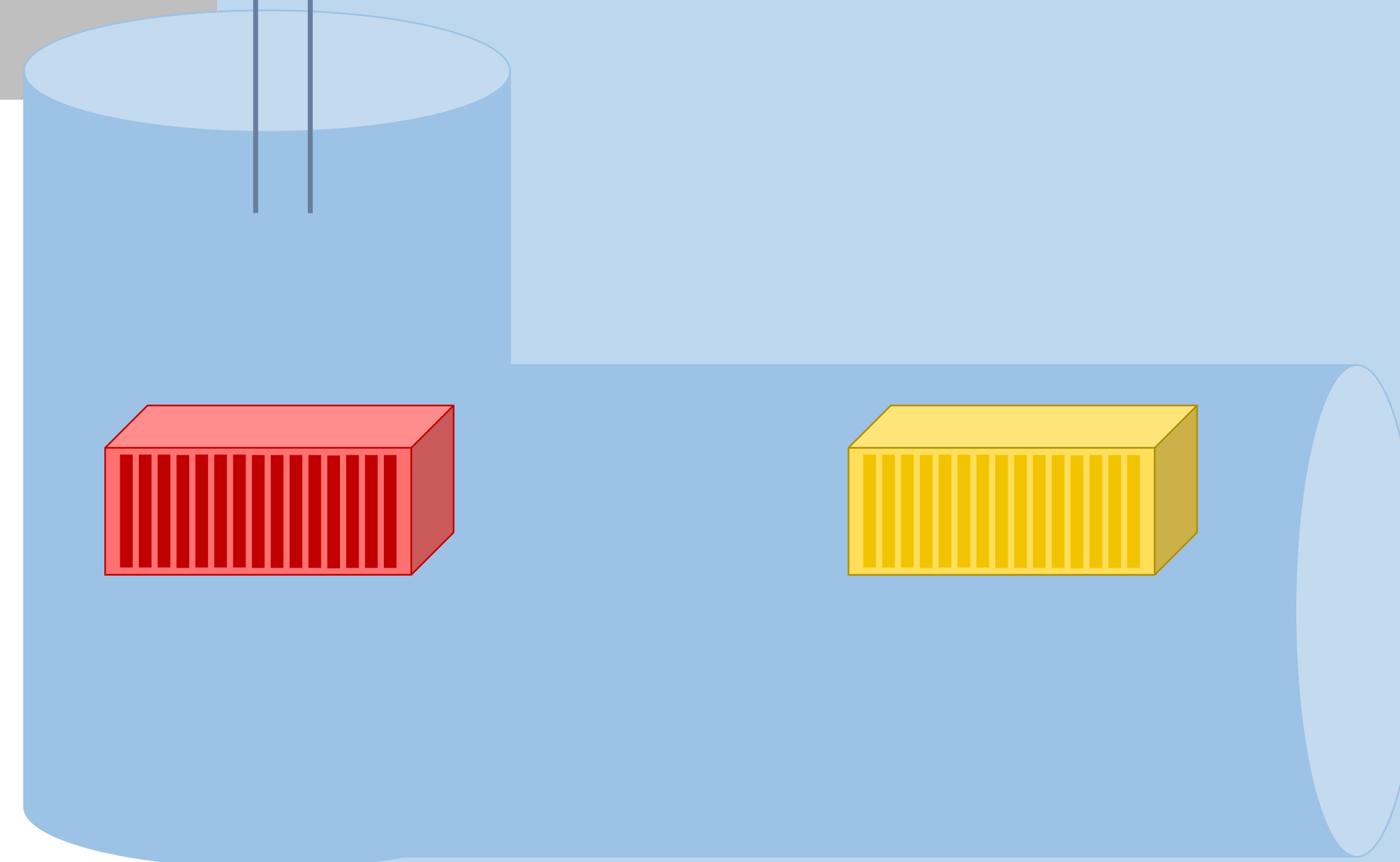
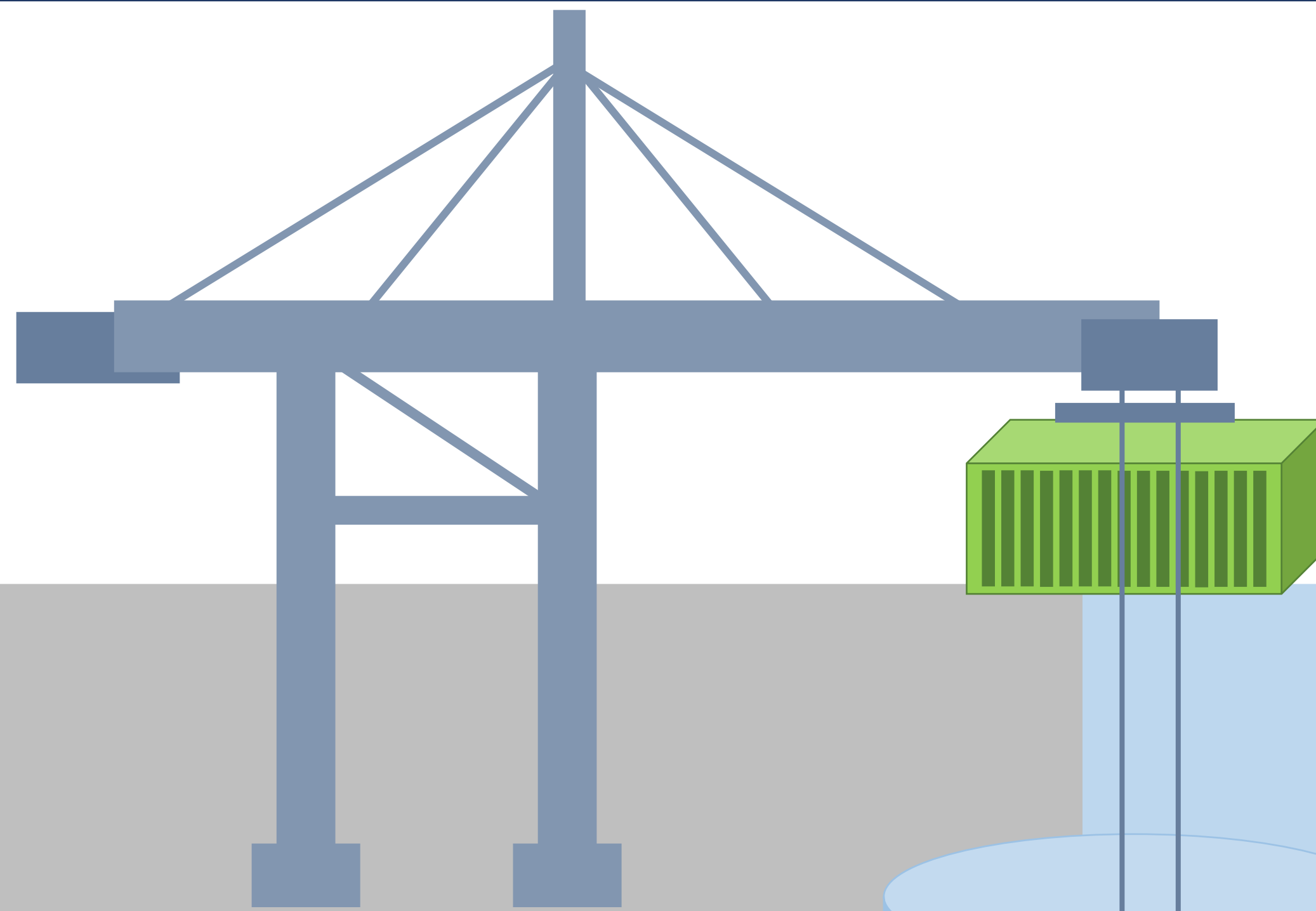


HYPERLOOP

↓ REDUCE CONSUMPTION ↓ REDUCE EMISSION



HIGH-SPEED TRANSPORT AND WAREHOUSE SYSTEM TECHNOLOGIES

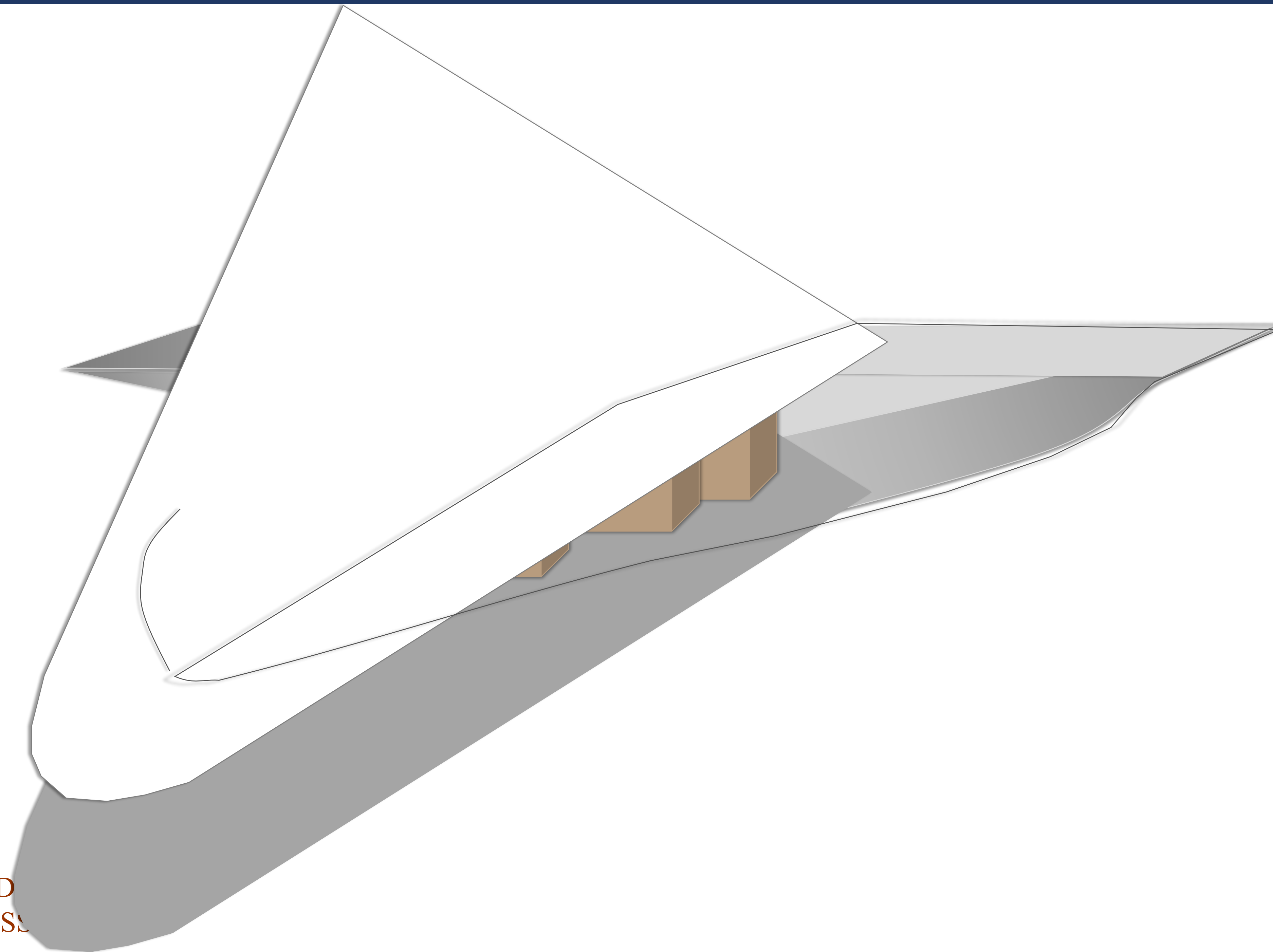


REEFER
TAINERLOOP

↓ REDUCE CONSUMPTION ↓ REDUCE EMISSION



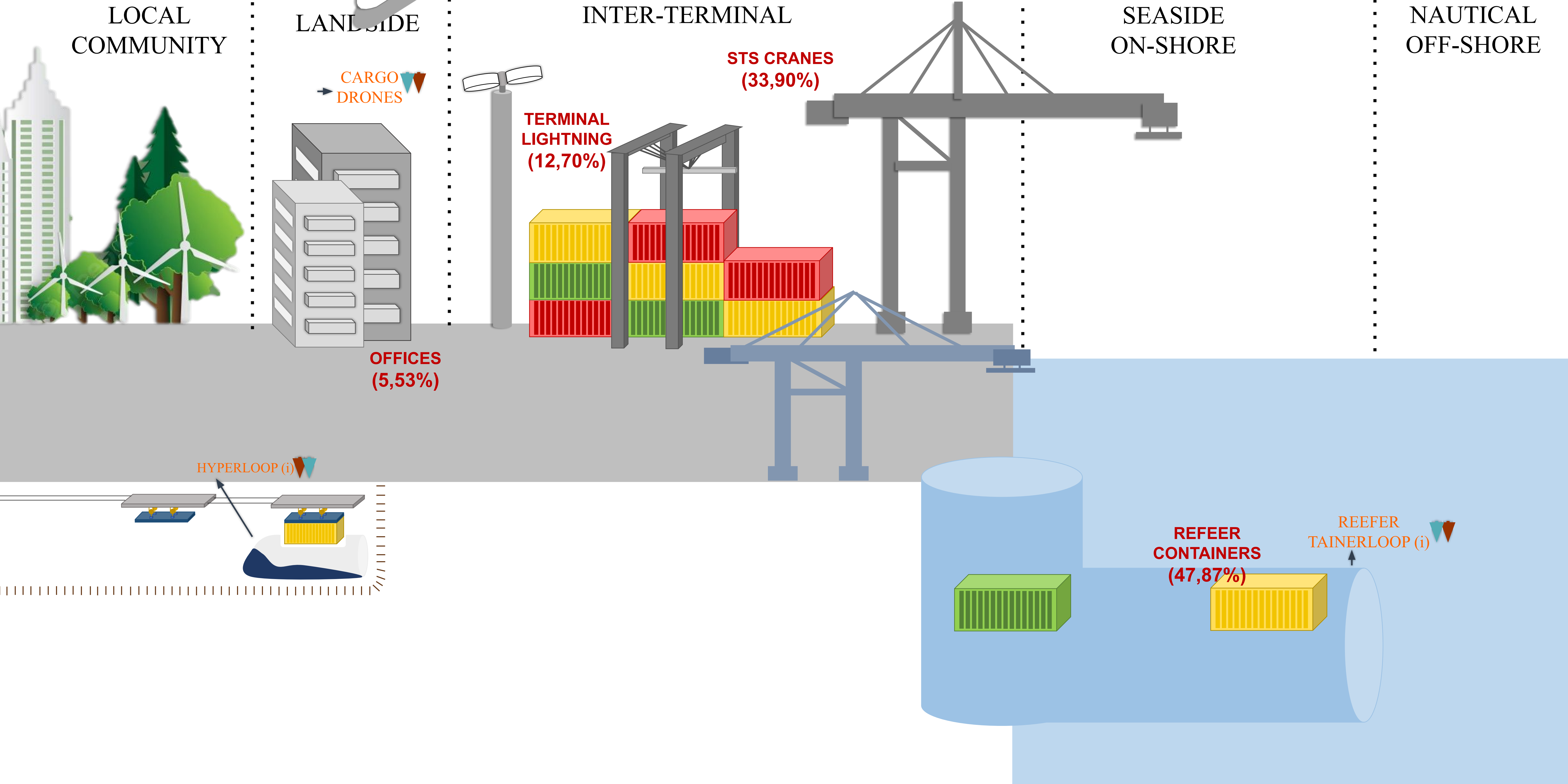
HIGH-SPEED TRANSPORT AND WAREHOUSE SYSTEM TECHNOLOGIES



CARGO
DRONES

↓ REDUCE
CONSUMPTION

↓ RED
EMISSIONS





2.2. HYBRID MACHINERY TECHNOLOGIES



HYBRID
TRUCKS



REDUCE
CONSUMPTION



REDUCE
EMISSION



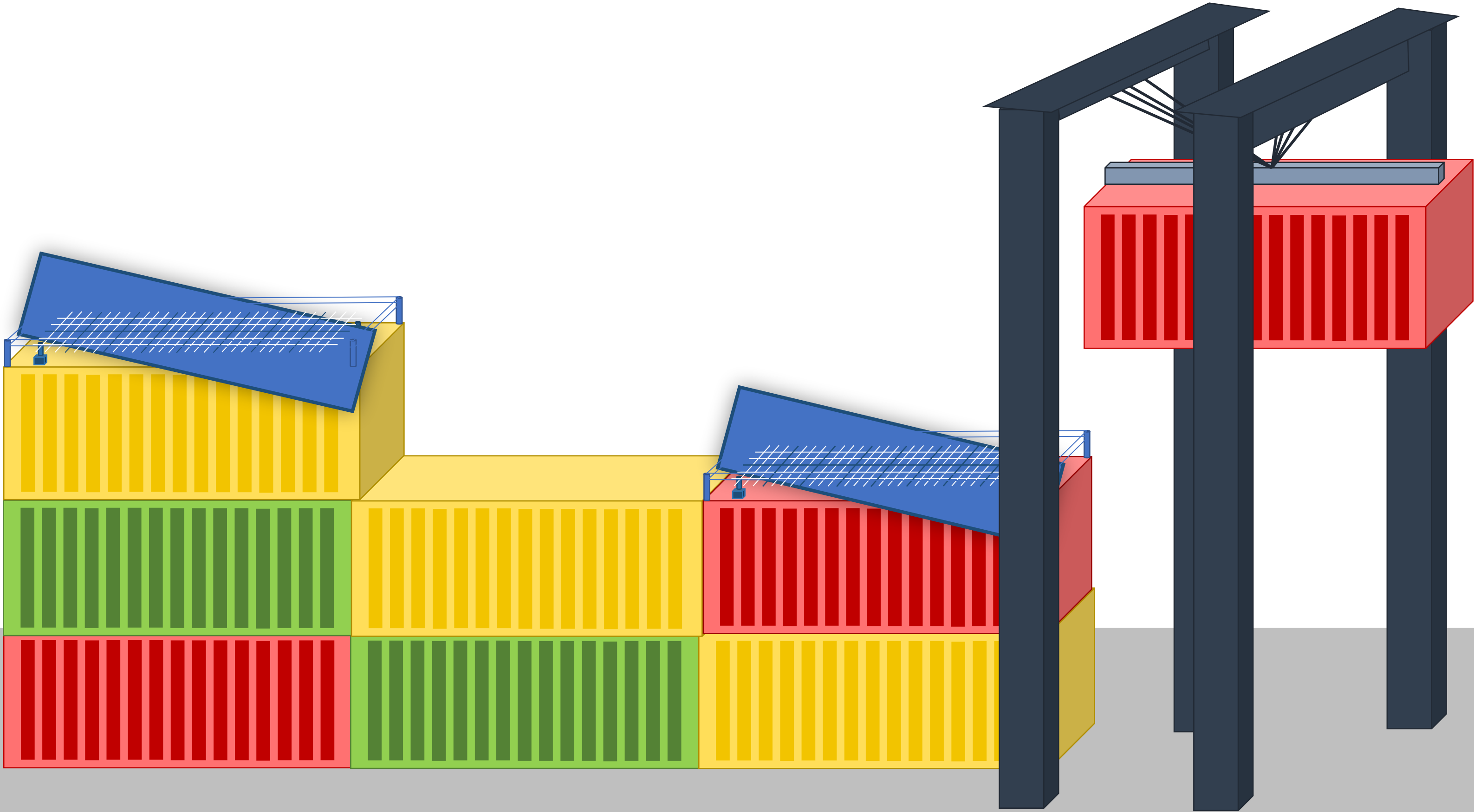
HYBRID
SHIP



REDUCE
CONSUMPTION



REDUCE
EMISSION



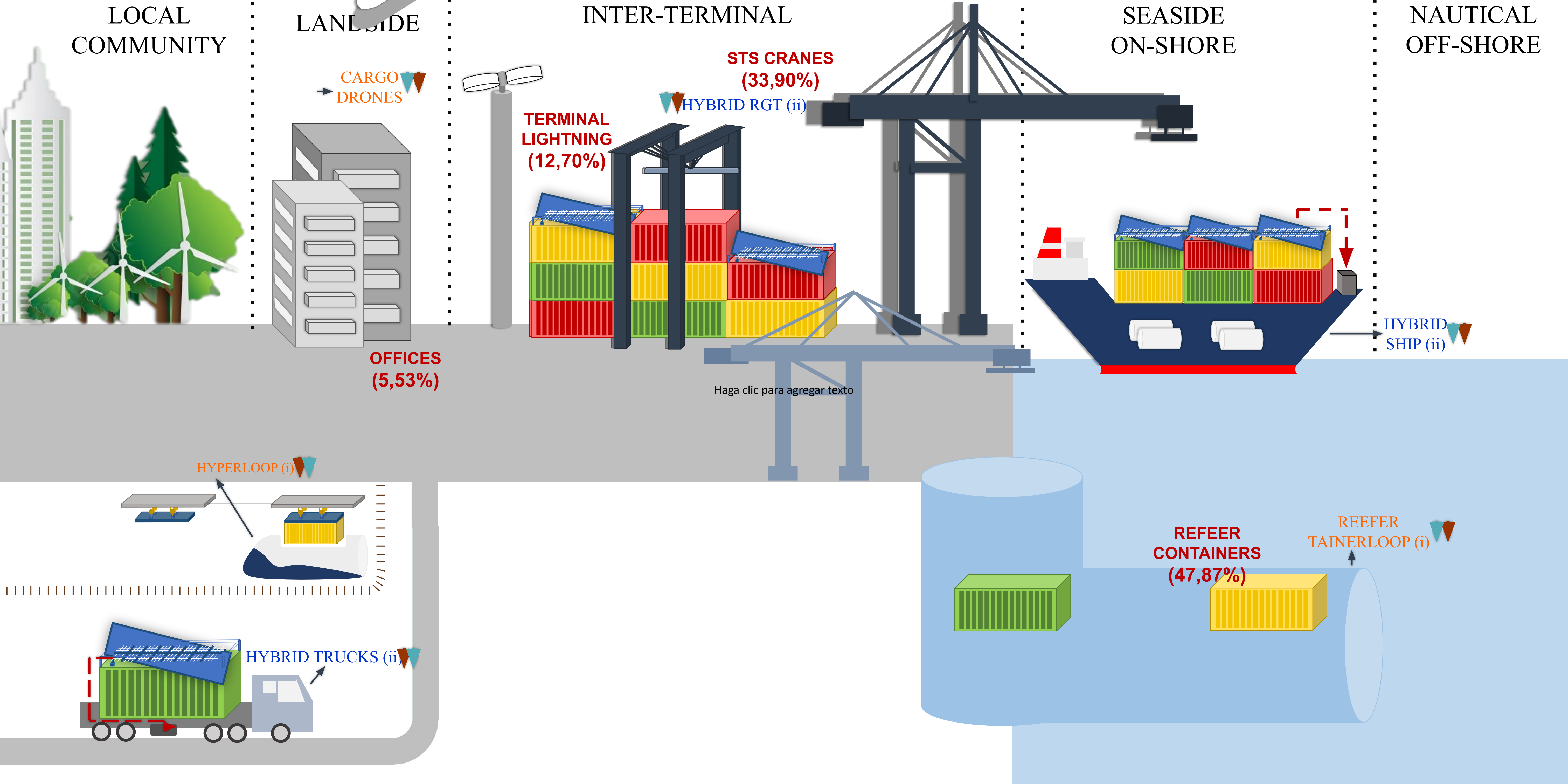
HYBRID RTG



REDUCE
CONSUMPTION

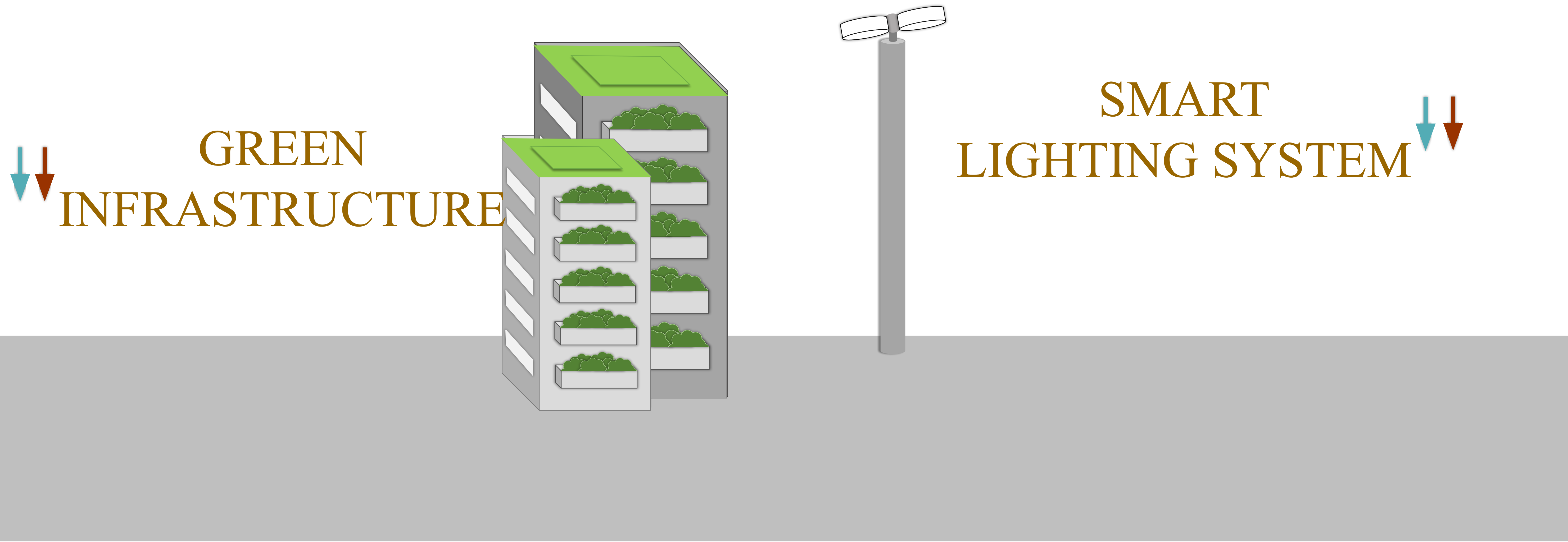


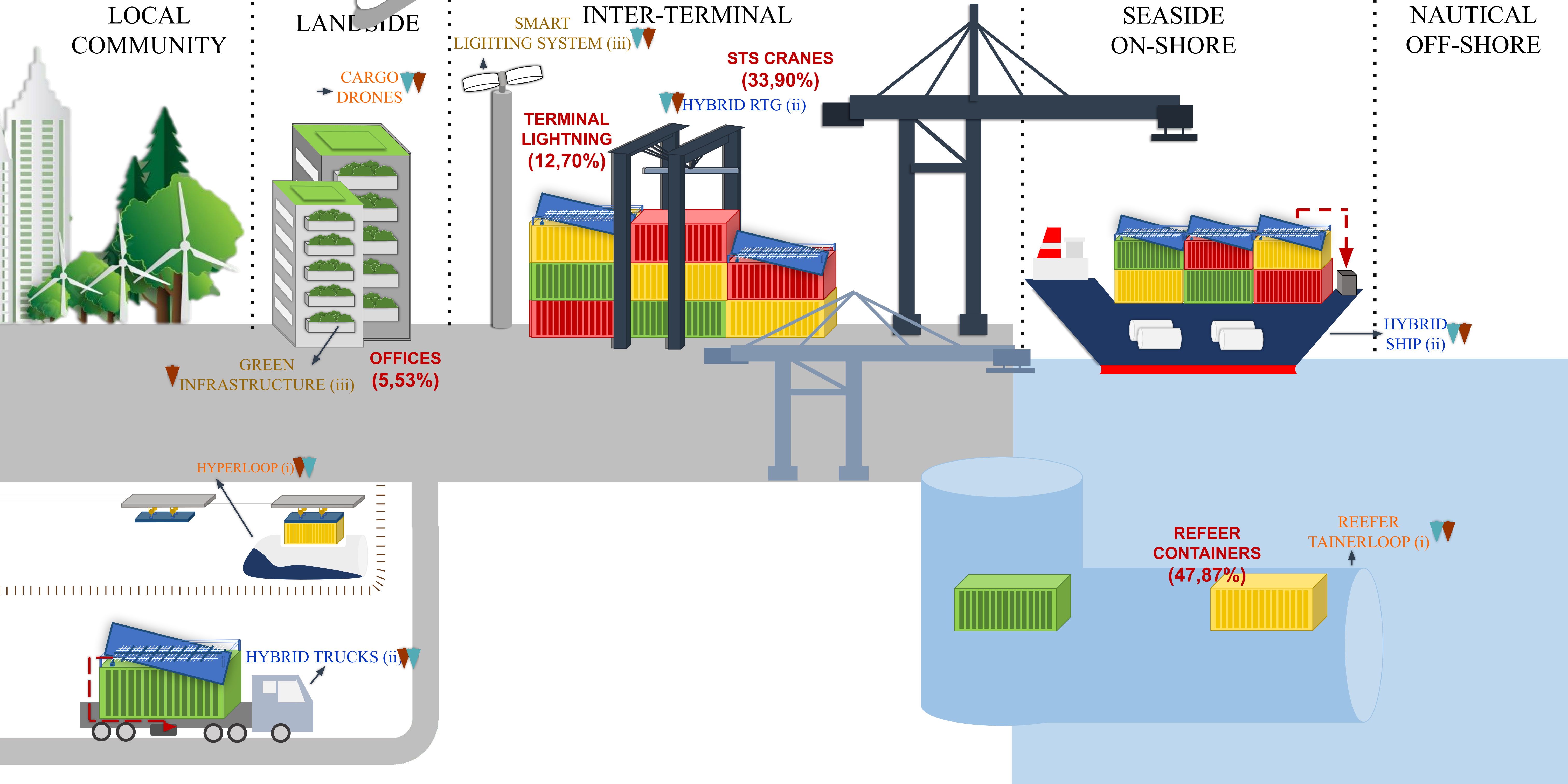
REDUCE
EMISSION





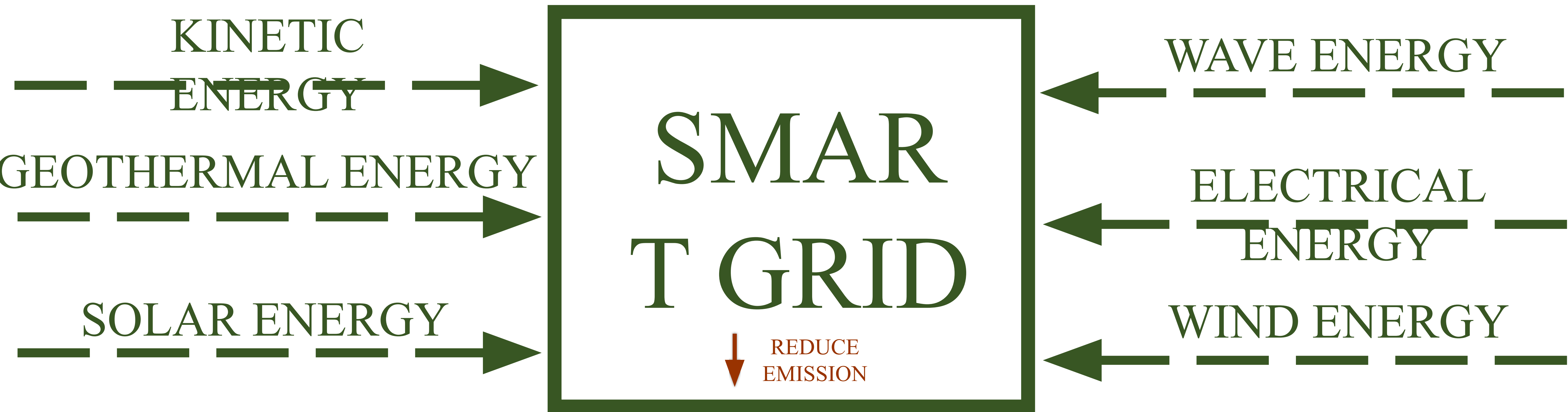
2.3. GREEN AND SMART LIGHTING

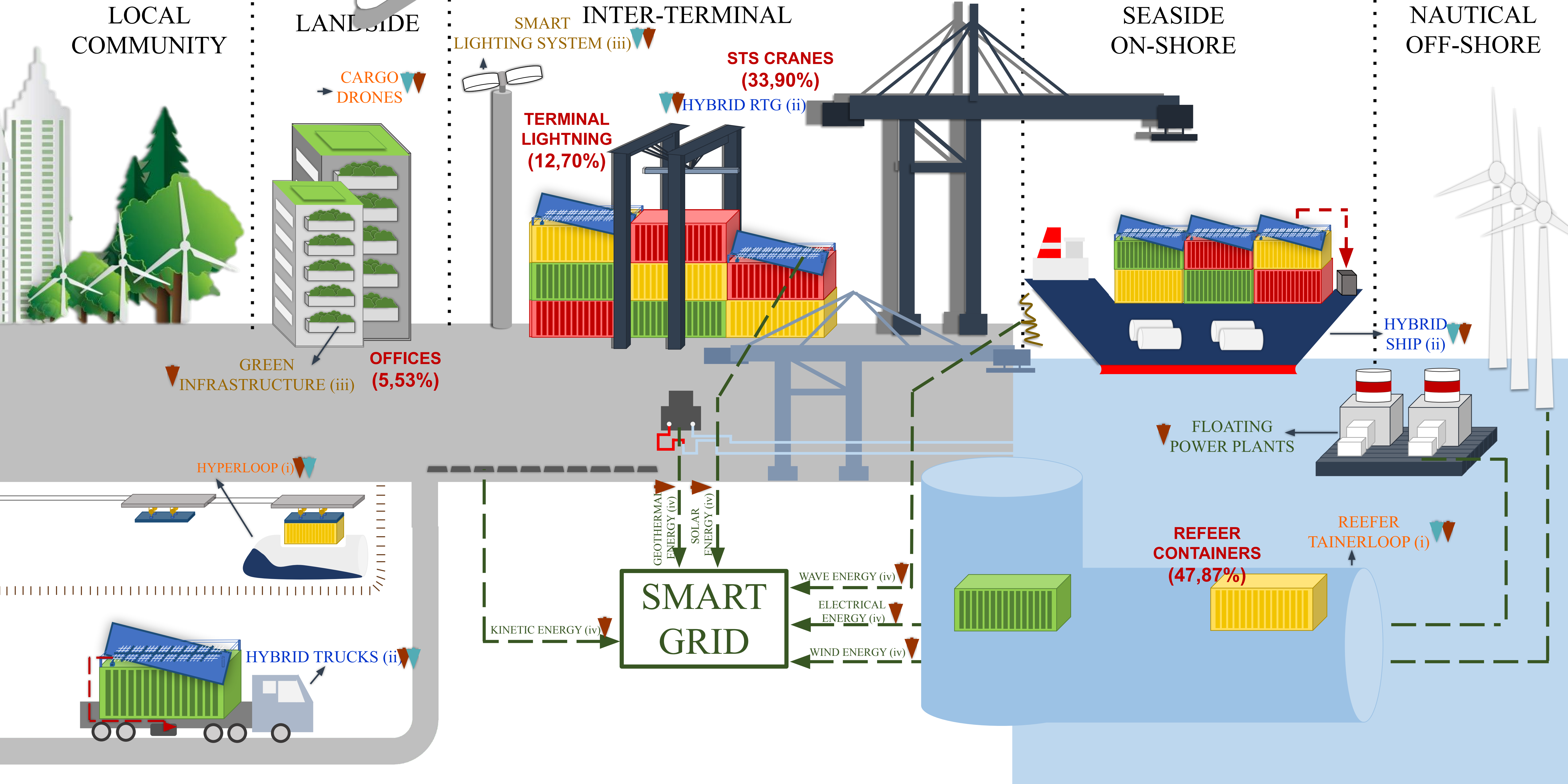






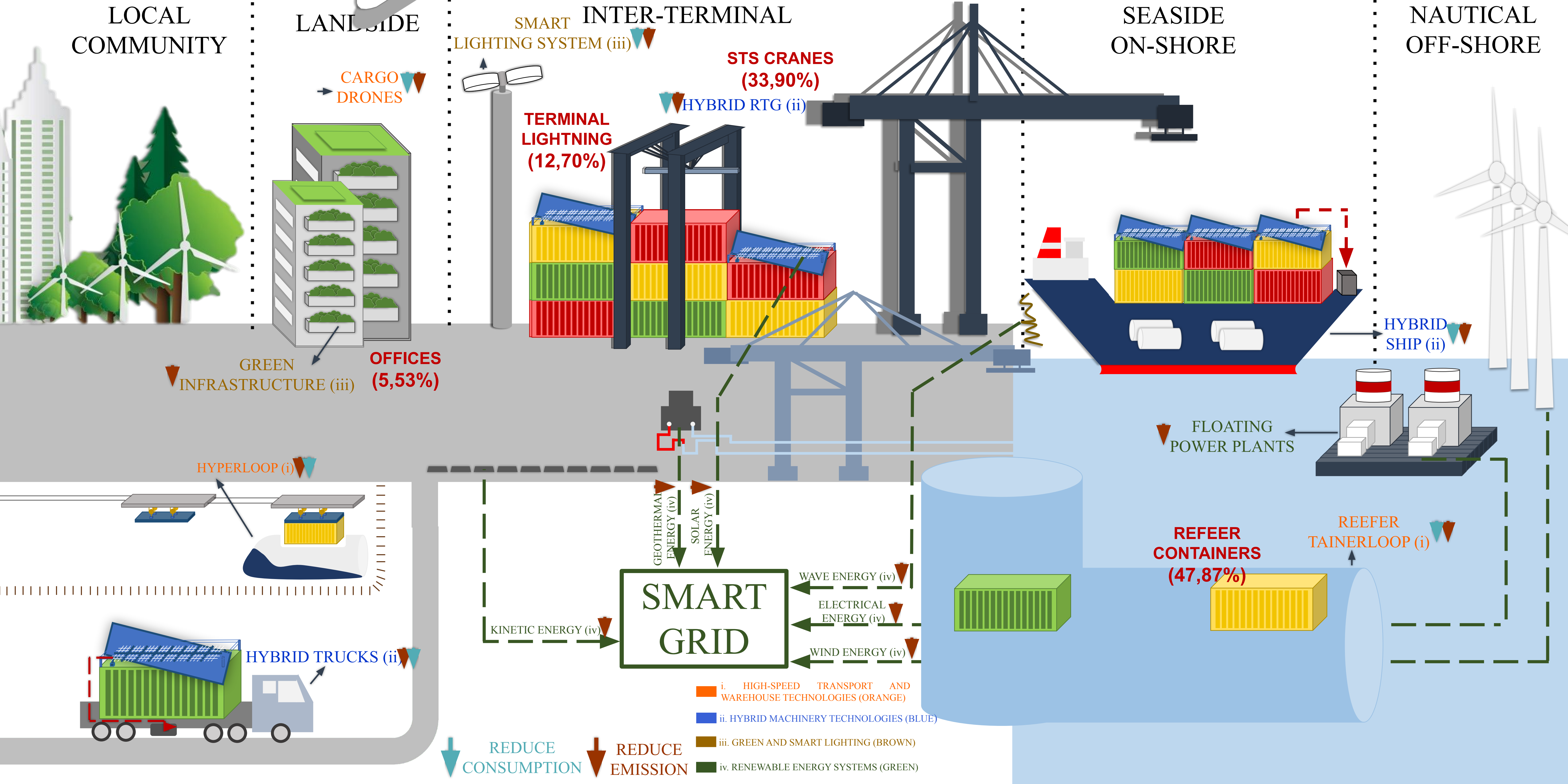
2.4. RENEWABLE ENERGY SYSTEMS





CONCLUSIONS





THANKS

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