CREATING A CARBON NEUTRAL HARBOR

PORT OF HELSINKI

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a forerunner

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THE WORLD'S MOST FUNCTIONAL PORT

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GOALS AND MOTIVATIONS

- Port of Helsinki 100% **carbon neutral** by 2035
- Affect CO2 emissions in **whole harbor area**
- Minimum **30% reduction of total CO2** emitted in harbor by 2035
- Program leaves room for **future advancements of technology** to be implemented along the way

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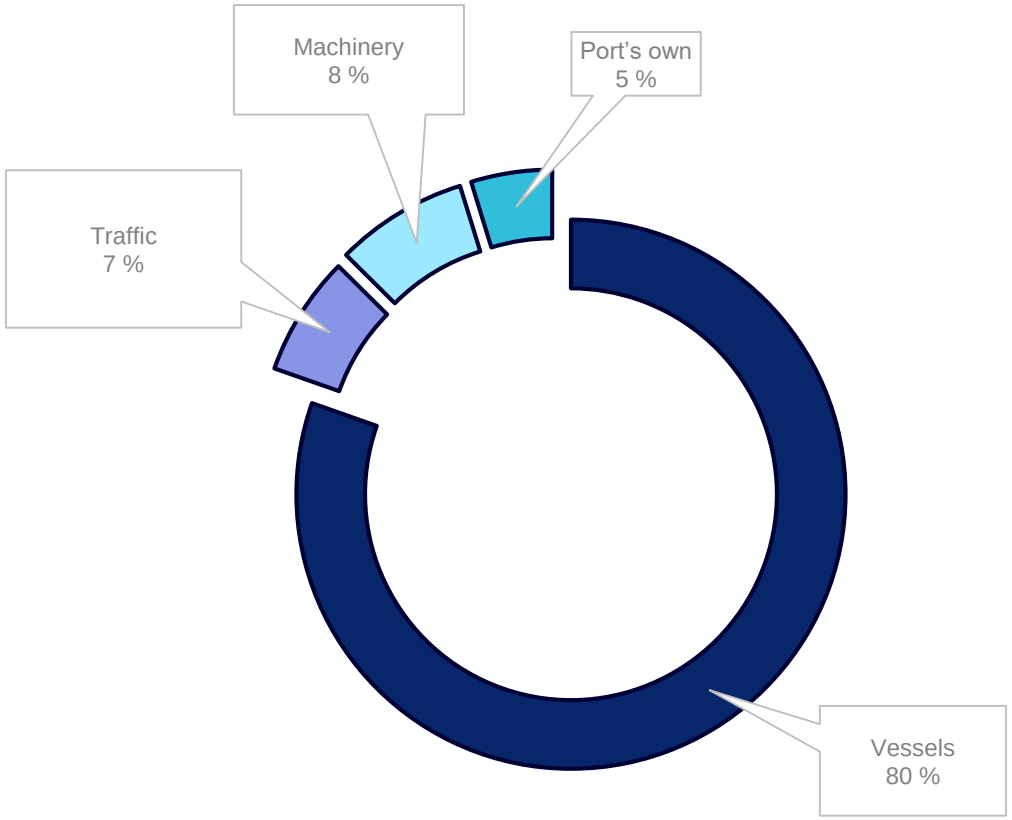
HARBOR AREA CO2 EMISSION SOURCES

1. Vessels
2. Heavy Machinery
3. Traffic
4. Port’s own (electricity, heating, cooling and electricity for vessels)

Harbor area CO2 emission distribution 2018



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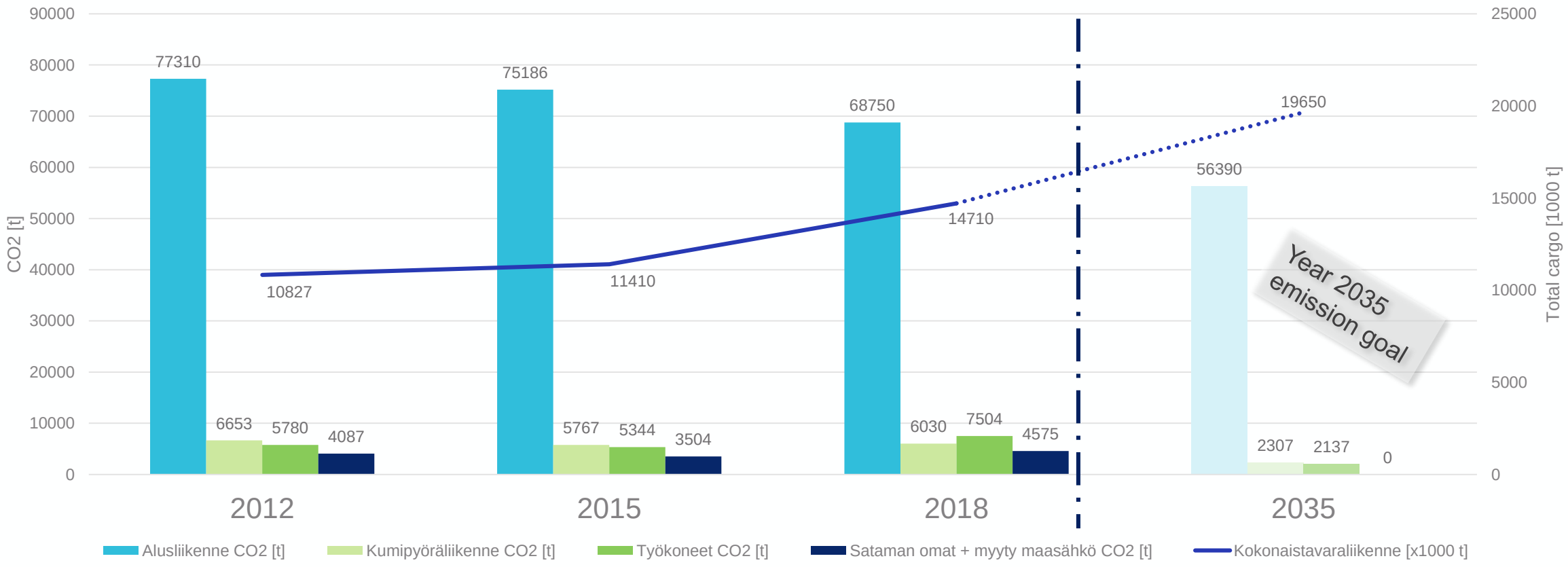
CO2-EMISSION DISTRIBUTION 2012, 2015, 2018 AND TARGET YEAR 2035



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ACTION!

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VESSEL CO_2 EMISSION

- OPS solutions to be installed where appropriate → ~50% reduction of CO_2 emissions at berth
- Additional automooring investments
- Enable bunkering of alternative fuels in Helsinki → New vessels ordered -> smaller emissions
- Further refine and adapt Environmental Discount Program

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HEAVY MACHINERY CO_2 EMISSIONS

- Future proof harbors for electrification of machine fleet
- Biofuels
- Carbon neutral and resource wise business parks – EU project
    - Operator interviews fall 2019
    - More detailed map of Vuosaari emissions, spring 2020
    - Low carbon procurements pilot, spring 2020
    - New technology pilot, 2020
- Harbor icebreaking. Switch to biofuels possible?

TRAFFIC CO_2 EMISSIONS

- Minimization of time spent in harbor
  - ”One gate”-project
  - ”Slot time”-project
  - In-harbor route optimization
  - Safe and fast routes to and from the harbors
  - Expedite vessel unloading and loading with improvements to infrastructure. Example: double ramps
- Incentives to environmentally friendly trucks

PORT'S OWN CO_2 EMISSIONS

- Self-optimizing LED lights (both inside and out)
- Heat recyling and reclaiming
- Building resource efficiency. Solar panels
- Use of heat pumps in building cooling and heating (sea water?)
- Use of 100% carbon free energy
    - Emission compensation the last line of defence
- Work related travelling, low- or no-emission commuting
- Sub-contractor carbon footprint reduction (separate project)

5 YEAR PLAN

2020

Vessels
2200 CO2 [t]
1,5 M€

Ports's own
563 CO2 [t]
1,6 M€

TOTAL
2763 CO2 [t]
3,1 M€
9,7%

2021

Vessels
5845 CO2 [t]
5,1 M€

Heavy machinery
1563 CO2 [t]
0,1 M€

Traffic
44 CO2 [t]
1,3 M€

Port's own
461 CO2 [t]
0,4 M€

TOTAL
7957 CO2 [t]
8,2 M€
37,6%

2022

Vessels
2097 CO2 [t]
1,3 M€

Heavy machinery
3206 CO2 [t]
0,6 M€

Traffic
44 CO2 [t]
0,5 M€

Port's own
85 CO2 [t]
0,5 M€

TOTAL
3918 CO2 [t]
2,4 M€
51,4%

2023

Vessels
757 CO2 [t]
0,9 M€

TOTAL
757 CO2 [t]
0,9 M€
54,0%

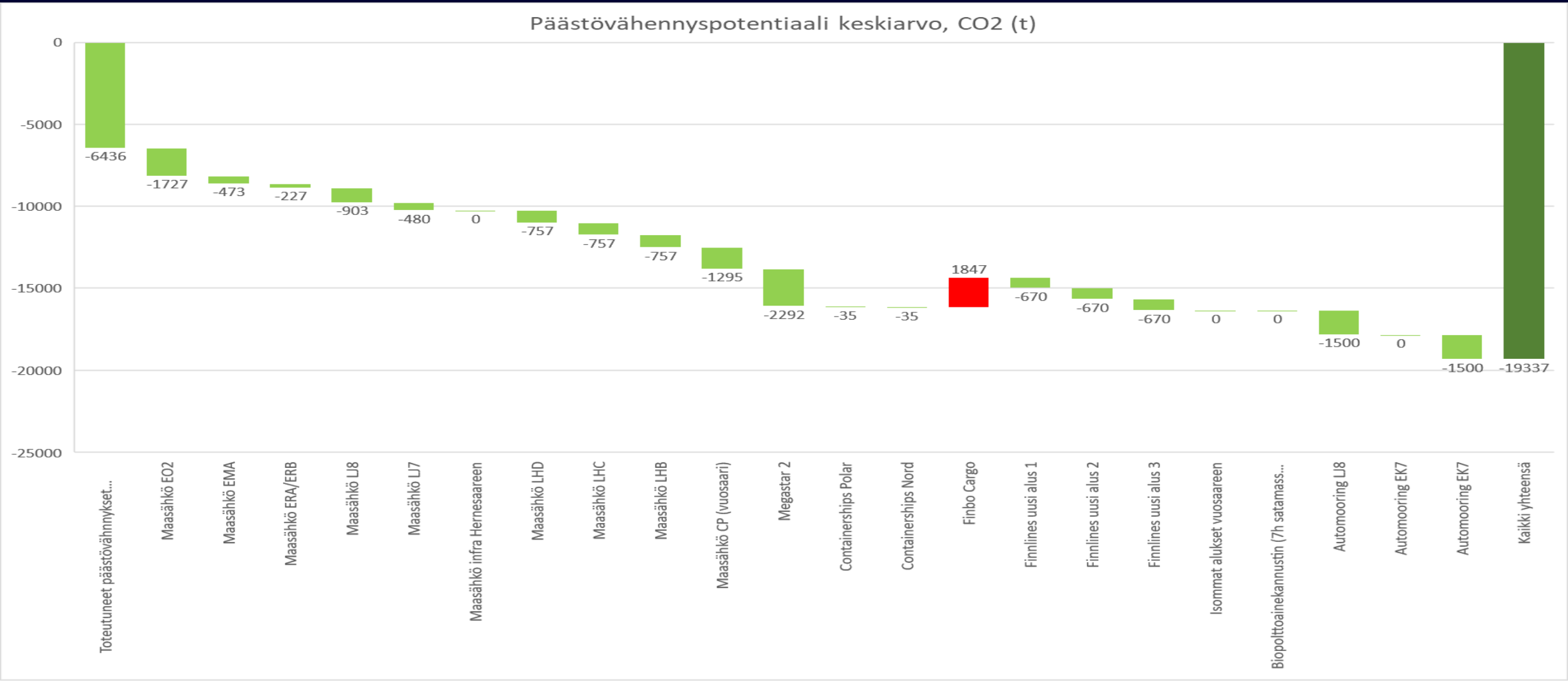
2024

Vessels
1295 CO2 [t]
2,8 M€

Portäs own
76 CO2 [t]
0,75 M€

TOTAL
1371 CO2 [t]
3,6 M€
58,9%

VESSEL TRAFFIC EMISSION REDUCTION MEASURES



NEXT STEPS

- Intermediate goals for 2020, 2025, 2030 & 2035
- Action program to commence 2020
- Quarterly monitoring of actions
- Yearly monitoring of emissions

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