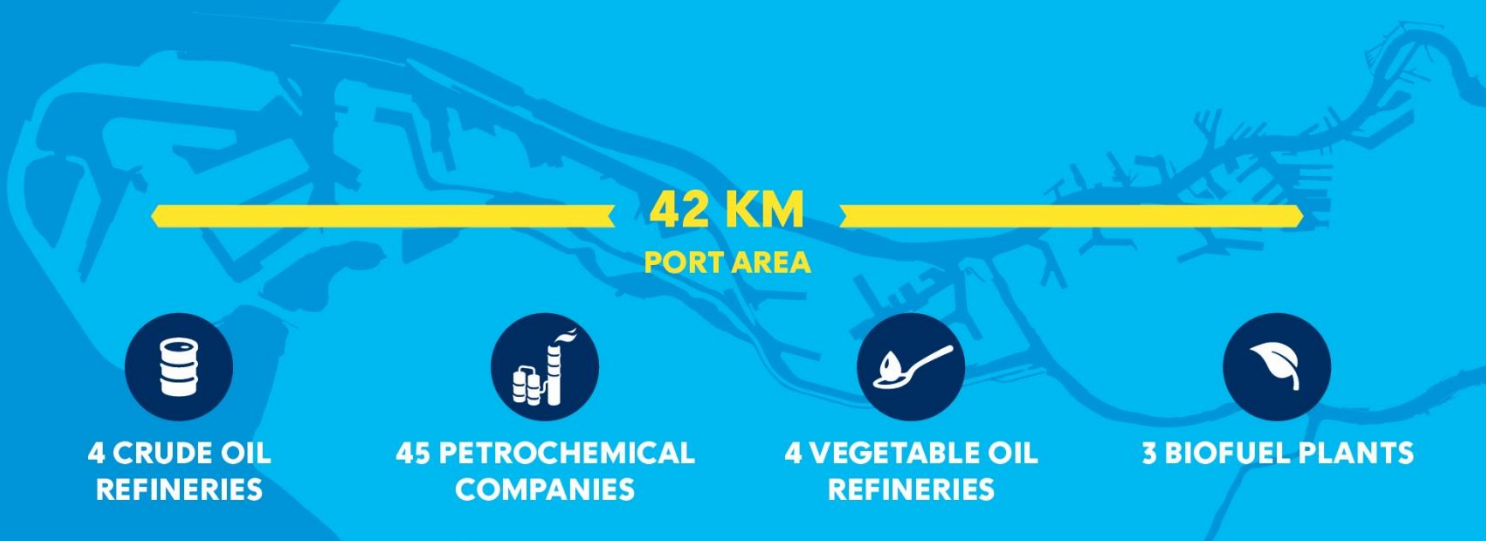


EXPERIENCES, ACTIONS AND FUTURE COMMITMENTS AT THE PORT OF ROTTERDAM



Maaïke Dalhuisen, MSc
Strategist, Port of Rotterdam Authority

PORT OF ROTTERDAM FACTS 2022



**AWARDED BEST
PORT INFRASTRUCTURE**



€63 BILLION
ADDED VALUE,
8.2% OF DUTCH BBP



30.000
SEA-GOING
VESSELS
PER YEAR



100.000
INLAND
VESSELS
PER YEAR



**FRONTRUNNER
IN SUSTAINABILITY**



NR. 1 BIOPORT



**469 MILLION TONNES
OF FREIGHT THROUGHPUT
IN 2021**

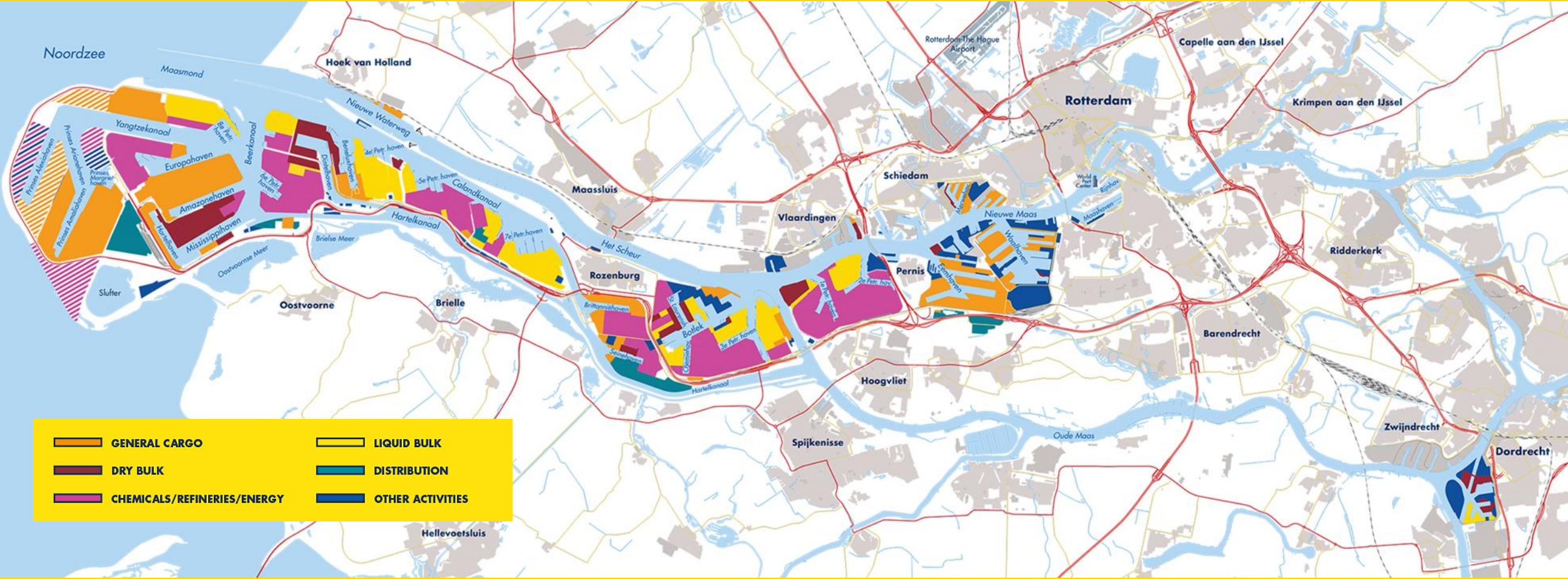


LARGEST EUROPEAN PORT

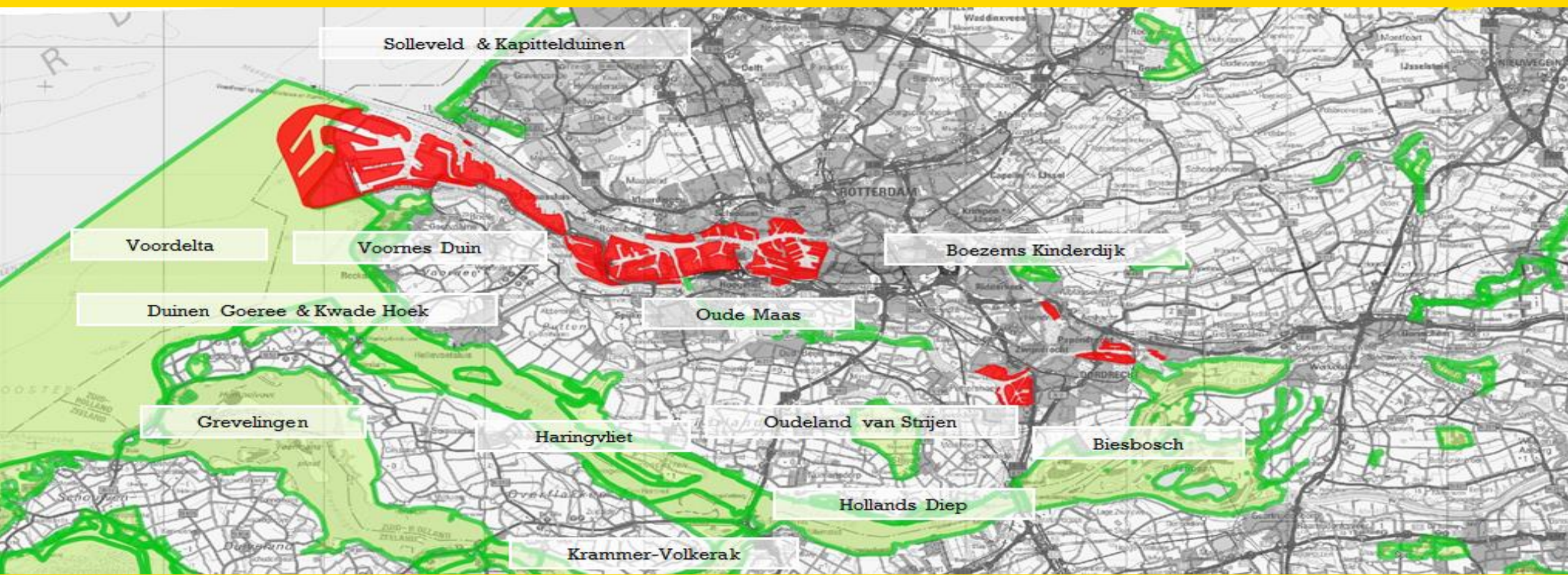


565.000
DIRECT & INDIRECT JOBS

PORT-INDUSTRIAL AREA (AND RESIDENTIAL AREAS)




PROTECTED NATURE AREAS (SURROUNDING THE PORT)



LICENSE TO OPERATE: EMISSIONS TARGETED BY PORT OF ROTTERDAM



Air quality



Climate



Noise



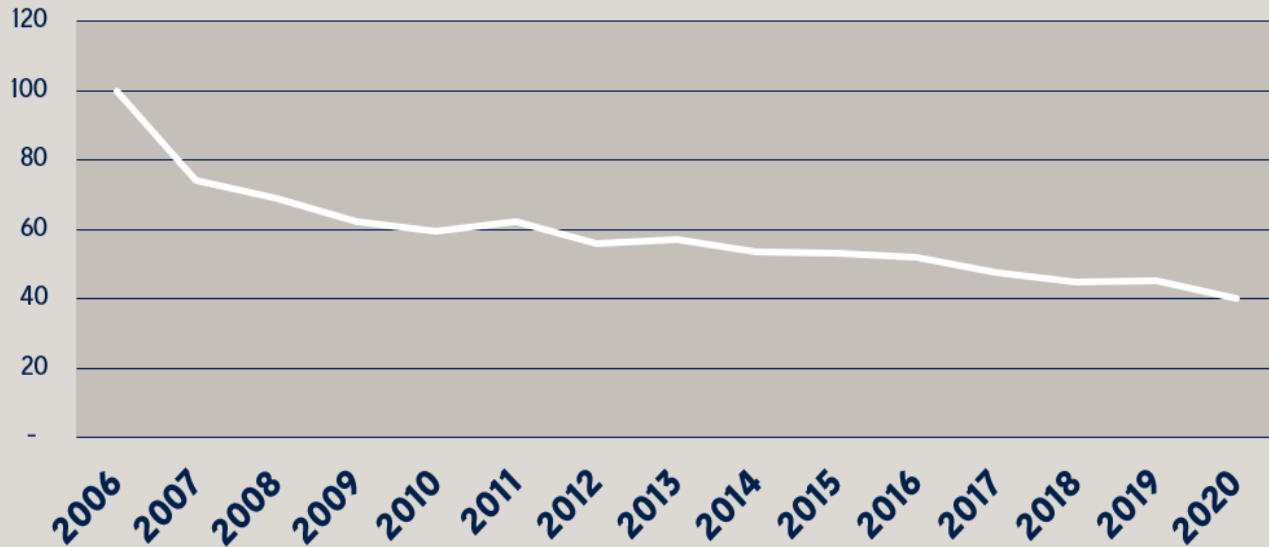
Smell

MAIN EMITTERS: INDUSTRY AND MARINE SHIPPING



NOX REDUCTION SO FAR

EMISSIONS INDUSTRY 60% DECREASE IN 15 YEARS



— NOx (source: DCMR)

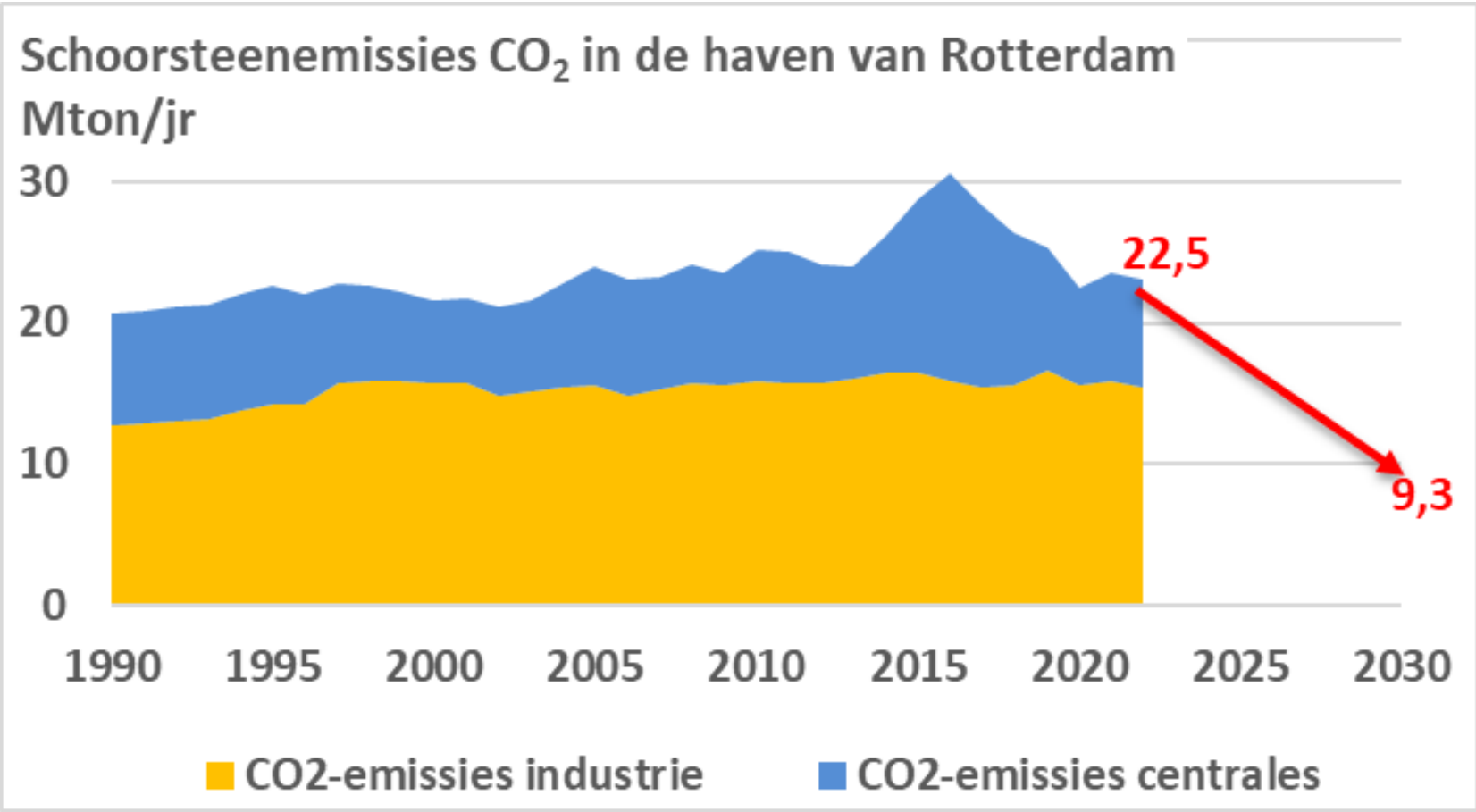
Selection of measures taken, e.g.:

- Implementatie of Best Available Techniques in industrial environmental permits
- Elektrificatie of deep sea containerterminals
- Shore side power for inland shipping
- Shore side power seagoing vessels: Heerema en Ro-Ro StenaLine
- Environmental zoning trucks Maasvlakte 1 en 2
- Implementation of a Northsea NECA
- Speedreduction programm of inland shipping

AIR QUALITY: MAIN CHALLENGES ON NITROGEN

1. Compliance with the (European) air quality limit values (focus PM10/2,5 and NOx)
2. Compliance with the Dutch nitrogen deposition requirements

CLIMATE: CO2 EMISSIONS INCREASED OVERTIME, STRONG DECREASE NEEDED FOR FIT FOR 55-TARGET



Excluding CO2 emissions related to transport

ENERGY TRANSITION: BASED ON 4 PILLARS

PILLAR

1

EFFICIENCY AND
INFRASTRUCTURE

PILLAR

2

A NEW ENERGY SYSTEM

PILLAR

3

A NEW RAW MATERIALS
AND FUEL SYSTEM

PILLAR

4

SUSTAINABLE TR
ANSPORT

-55% CO₂ IN 2030

CO₂-NEUTRAL IN 2050

OPPORTUNITIES TO CREATE SUSTAINABLE SUPPLY CHAINS

EFFICIENCY

Lower fuel consumption

FUEL SHIFT

Sustainable fuels

MODAL SHIFT

Most sustainable transport mode

THE CHALLENGE



DEEPSEA SHIPPING
87%

PORT
3%

HINTERLAND
10%


HIGHER LOAD FACTOR


PORT CALL OPTIMIZATION


SAILING SPEED OPTIMIZATION


SUSTAINABLE FUELS


HULL CLEANING


SHORE POWER


EFFICIENT SHIP HANDLING


SUSTAINABLE FUELS


COMBINING CARGO


PLANNING OPTIMIZATION


SUSTAINABLE FUELS & PROPULSION


HIGHER LOAD FACTOR


CHOOSING MOST SUSTAINABLE MEANS OF TRANSPORT

GOAL 2050
A CO₂ NEUTRAL SUPPLY CHAIN



MAGPiE
SMART GREEN PORTS

sMArt Green Ports as Integrated Efficient multimodal hubs



Funded by
the European Union

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Partners MAGPIE

THE NETHERLANDS

AI In Motion - Eindhoven
APM Terminals Maasvlakte II B.V. - Rotterdam
Blockchain Fieldlab B.V. - Rotterdam
Bluewater Energy Services - Hoofddorp
Chemgas Shipping B.V. - Rotterdam
DAF Trucks N.V. - Eindhoven
DHL Global Forwarding - Schiphol
ENECO - Rotterdam
Erasmus University Rotterdam - Rotterdam
GoodFuels B.V. - Amsterdam
Heerema Marine Contractors - Leiden
MARIN, Maritiem Research Instituut - Wageningen
Netherlands Maritime Technology Foundation - Rotterdam
Pitpoint.LNG - Nieuwegein
Port of Rotterdam - Rotterdam
ProRail B.V. - Utrecht
Proton Ventures - Schiedam
Rail Innovators Holding B.V. - Rotterdam
SPB - Rotterdam
TNO - Delft
TU Delft - Delft
Van Oord Offshore B.V. - Rotterdam
Van Oord Ship Management B.V. - Rotterdam
VDL Enabling Transport Solutions - Valkenswaard
Wartsila Netherlands B.V. - Schiedam
Zero Emission Services (ZES) - Rotterdam

FRANCE

Air Liquide France Industrie - Paris
AIVP - Le Havre
CIRCOE - Le Havre
Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA) - Paris
IFP Énergies Nouvelles - Paris
HAROPA Port - Le Havre, Rouen, Paris

SWEDEN

Volvo Technology AB - Stockholm

DENMARK

Maersk Mc-Kinney Moller Center for Zero Carbon Shipping - Aarhus

PORT OF ROTTERDAM

HAROPA PORT

DELTAPORT

GERMANY

DeltaPort - Wesel
EWI, Energiewirtschaftliche Institut - Köln
Fraunhofer Gesellschaft - München
H2 PEG GmbH - Rheinberg
Imgrund Silogistic GmbH - Wesel
MTS Emmelsum GmbH - Xanten
Niederrheinische Verkehrsbetriebe Aktiengesellschaft - Moers
Planco Consulting GmbH - Hamburg

PORTUGAL

APS S.A. Porto de Sines - Sines
EDP & CTG - Lisbon
INESC TEC - Porto

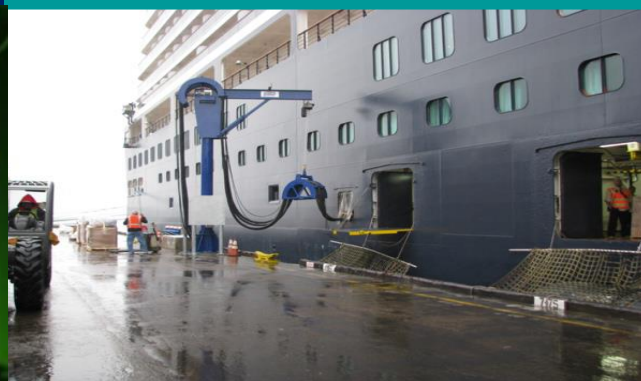
PORT OF SINES

DEMONSTRATORS

• E-METHANOL PRODUCTION



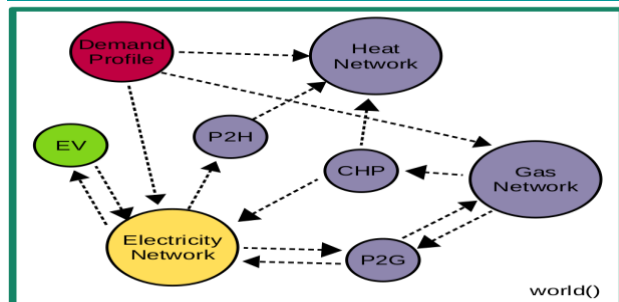
• SHORE POWER PEAK SHAVING



• OFFSHORE CHARGING BUOY



• SMART ENERGY SYSTEMS



● FMUs
 ● pandapower
 ● External simulators
 ● CSV
 - - - - -> Connections

• AMMONIA BUNKERING



• AUTONOMOUS E-BARGE



DEMONSTRATORS + TOOLS

GREEN ENERGY CONTAINER



GREEN CONNECTED TRUCKING



GREEN ENERGY MATCHING TOOL

GREENHOUSE GAS TOOLING

SMART GREEN LOGISTICS TOOLING

PORT TARIFF DIFFERENTIATION

HYBRID SHUNTING LOCOMOTIVE



SPREADING ROAD TRAFFIC



MASTERPLAN FOR EUROPEAN PORTS: WORKING TOGETHER IS ESSENTIAL

Port
level

Categorization of ports

Where are we now? ✓

Vision 2050

Where do we go?

Roadmap 2030/2040/2050

How do we get there?

Demo
level

Handbook of demonstrators



THANK YOU!

