



Climate-KIC

Climate-KIC is supported by the
EIT, a body of the European Union



Maritime Sector and Industrial Symbiosis: EIT Climate-KIC

27 May 2020

Maria Loloni, Maritime Programme Manager EIT Climate-KIC



@ClimateKIC

A person is shown from the chest up, holding a large amount of dark, rich soil in their cupped hands. The soil is falling through their fingers, creating a dynamic, blurred effect. The person is wearing a green sleeveless shirt. The background is a lush, green, out-of-focus natural setting. The overall tone is earthy and hopeful, representing the connection between nature and human innovation.

EIT Climate-KIC is a climate innovation agency and community working to catalyse these transformations, using systems innovation as a key tool.

TUM Technische Universität München
 Ajuntament de CASTELLO
 The SEED Foundation
 La pinada KARBONFUTURES ECONOMY
 MEECO
 ARIA
 ECOLE POLYTECHNIQUE
 GREATER LONDON AUTHORITY
 FSK
 ECOLOGICAL INNOVATION
 C40 CITIES
 TECHNO TREND
 WWF
 ENLIGHT
 ECODOM
 aavaesen
 YES! DELFT
 CITY OF STRANER
 ENGIE Laborelec
 MATERIAL ECONOMICS
 aza
 DRAWDOWN
 QUANTIS
 ENGIE Laborelec
 ERFC
 CCS
 ROCKWOOL
 2degrees
 CybeleTech
 LWARB THERALYTICS
 NTU
 ING PAN
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 FACULDADE DE CIÊNCIAS E TECNOLOGIA
 aerospacE valley
 Materno
 ECOSPEED Business
 COWI
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 GENILLARD & CO
 ORIGINPOWER
 LAS NAVES
 AGROPARISTECH
 FUTUREPROOFED
 TRENTOINOSVILUPPO

ione urbana

Climate Leadership Coalition

OAKDENE HOLLINS

LEUVEN 2030

MINDER UITSTOOT MEER TOEGANG

ORLÉANS MÉTROPOLÉ LISBOA

e-nova

ISS Ethix

CETAR

Carbon Tracker

GENILLARD & CO

INSURANCE FACTORY

ENGIE

VEOLIA

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e-on

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GFZ

vito

INRA

south pole group

fuoDelft

eccir

DEDAGROUP

Deltarates

UNIVERSITY OF COPENHAGEN

TNO

Innovation for life

Vakbureau Clusster

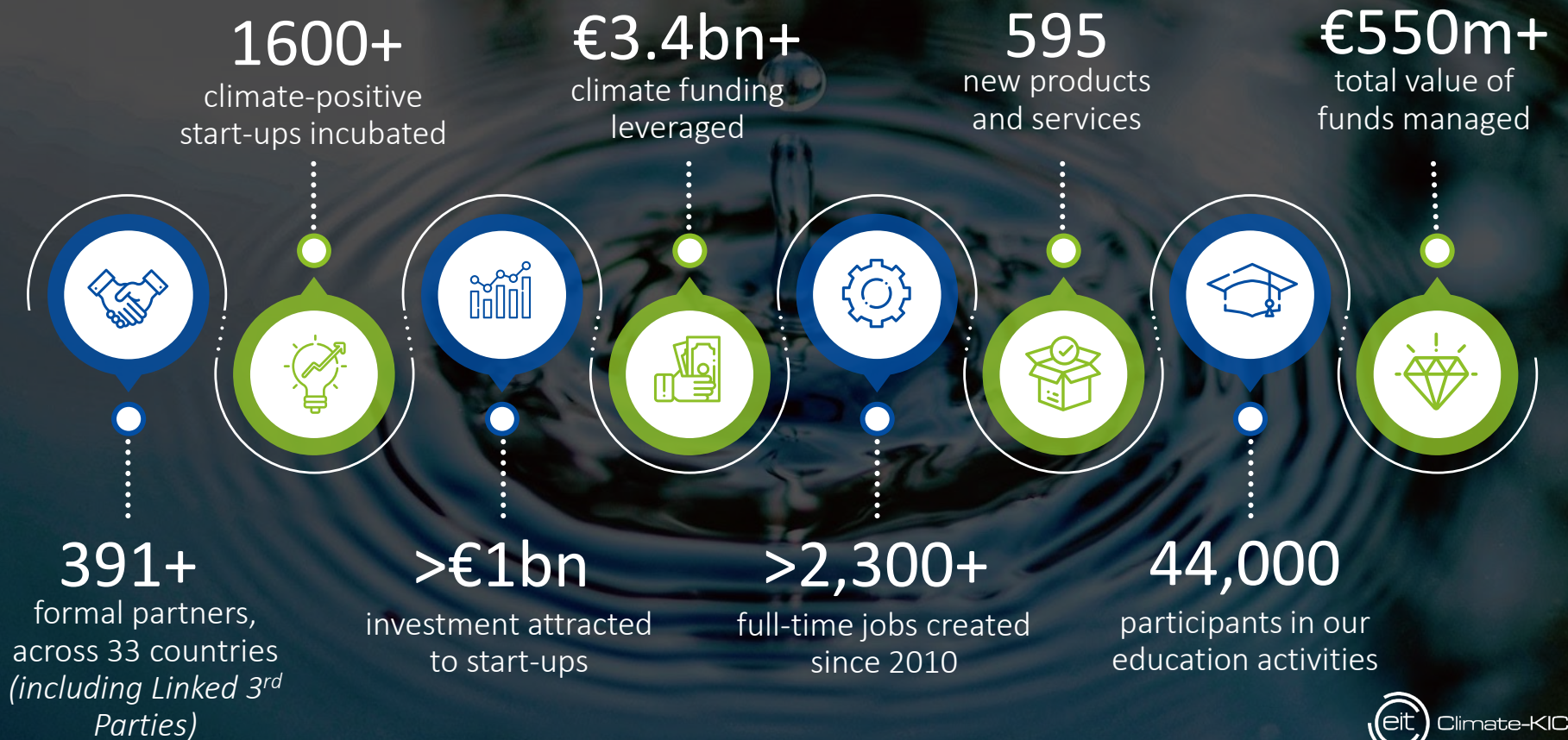
ITE

25 A N G S

Juntos Creemos



Our 10-year track record in climate innovation



10 years of experience has taught us that achieving the systemic change we need requires a different order of innovation.

Incremental

System innovation

Transformational

Project finance model

Portfolio finance model

Single projects and incremental change

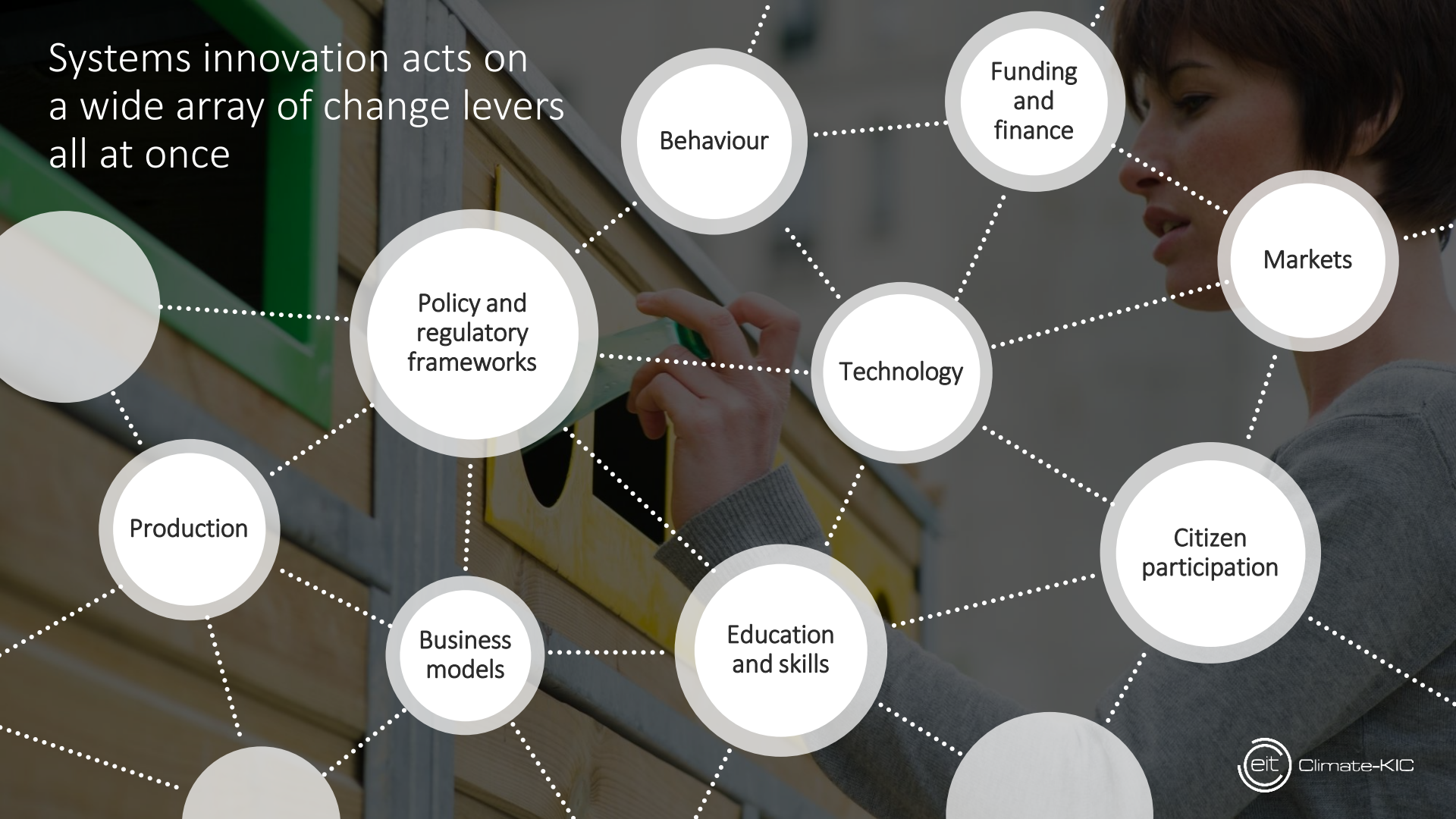
Portfolio of connected innovation projects that learn from each other

Siloed and fragmented activities, often focused on technological improvements

Wide appreciation of change levers



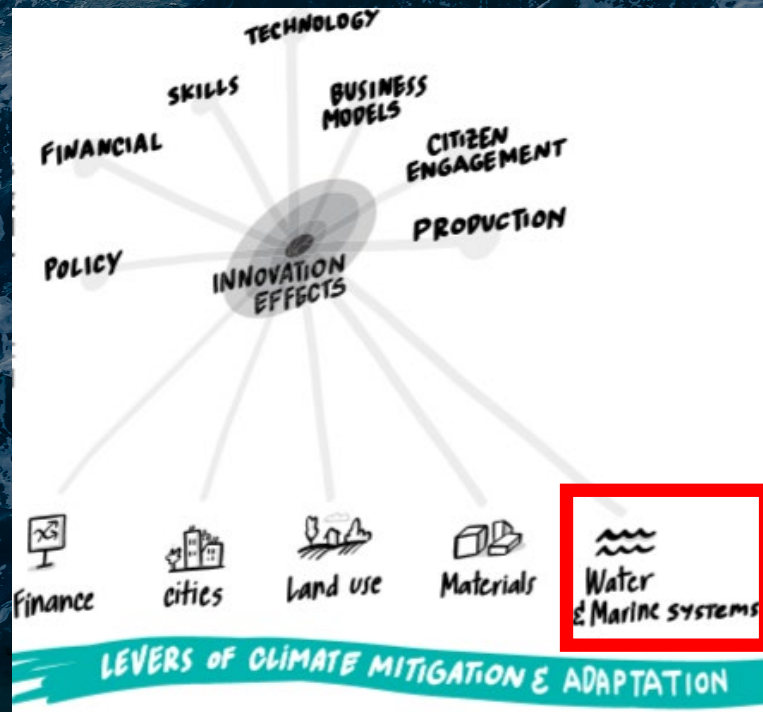
Systems innovation acts on
a wide array of change levers
all at once



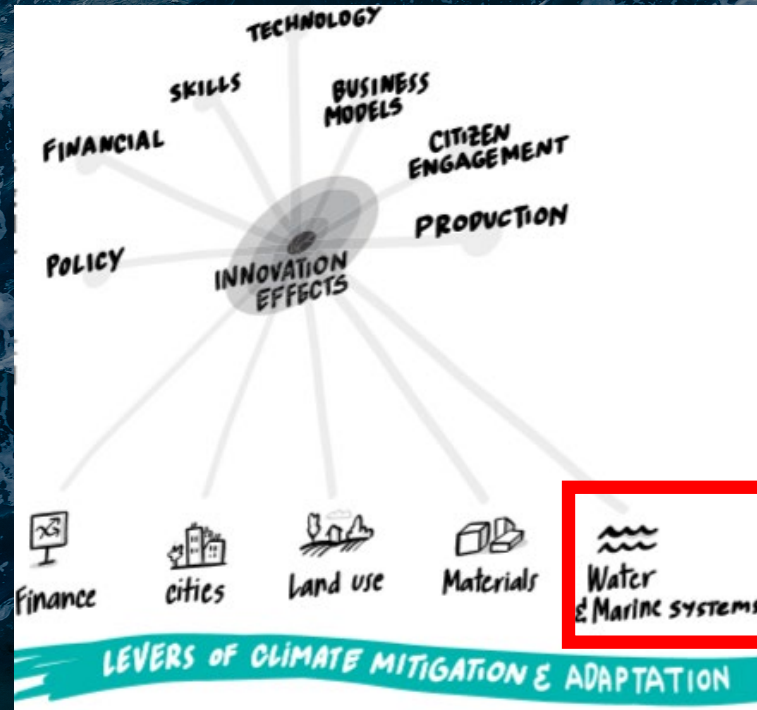


EIT Climate-KIC work in the Maritime Sector

“Transformation in Time”



“Transformation in Time”



Circular

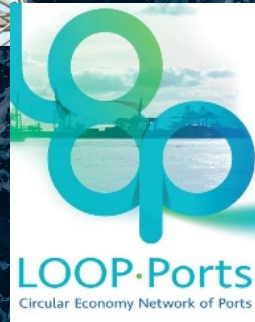
Inclusive

Resilient

Net-zero carbon

EIT Climate-KIC work in The Maritime Sector

- BI.EU Climate
- A Transition for Aarhus
- Deep Demonstration in Maritime Hubs

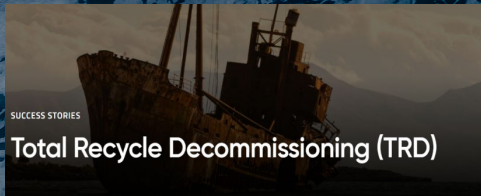


Pioneers

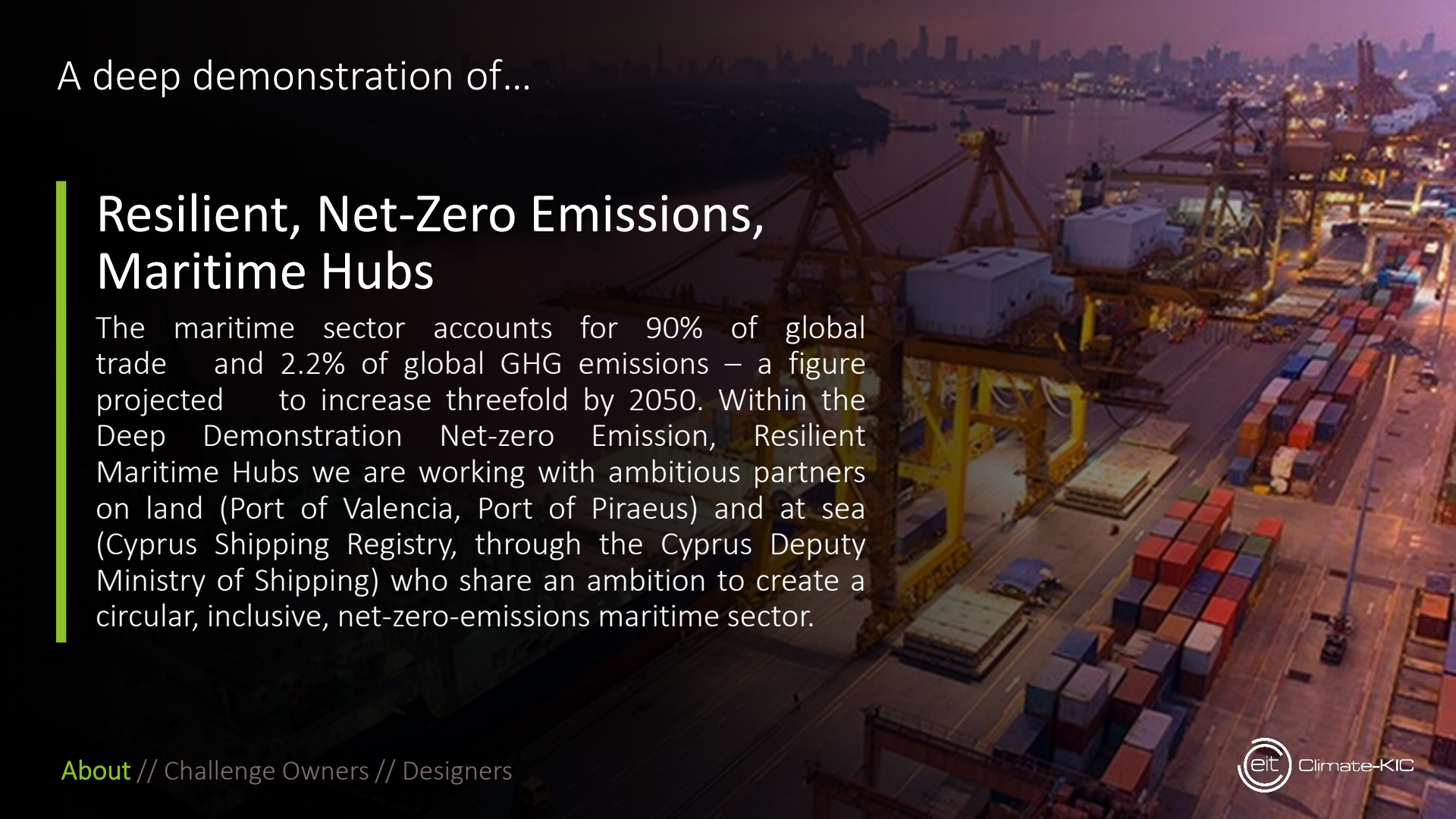
Climathon

Journey

ClimateLaunchpad



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A deep demonstration of...

Resilient, Net-Zero Emissions, Maritime Hubs

The maritime sector accounts for 90% of global trade and 2.2% of global GHG emissions – a figure projected to increase threefold by 2050. Within the Deep Demonstration Net-zero Emission, Resilient Maritime Hubs we are working with ambitious partners on land (Port of Valencia, Port of Piraeus) and at sea (Cyprus Shipping Registry, through the Cyprus Deputy Ministry of Shipping) who share an ambition to create a circular, inclusive, net-zero-emissions maritime sector.

Net-Zero Emission, Resilient Maritime Hubs

Challenge owners

We are currently working with three Mediterranean partners in our fifth focus area on water and marine systems.



1
**Port of
Valencia**

2
**Port of
Piraeus**

3
**Cyprus Ship
Registry**
through Cyprus
Deputy Ministry
of Shipping

Net-Zero-Emission,
Resilient Maritime Hubs

Designers



Cyprus
Energy
Agency



Cyprus
University of
Technology



CHRYSLIS
LEAP



FUNDACIÓN
valenciaport



ATHENA
Research & Innovation
Information Technologies



ITE
INSTITUTO TECNOLÓGICO DE
LA ENERGÍA



AquaBioTech GROUP



UNIVERSITY
OF TURKU



SCALing European Resources with industrial symbiosis

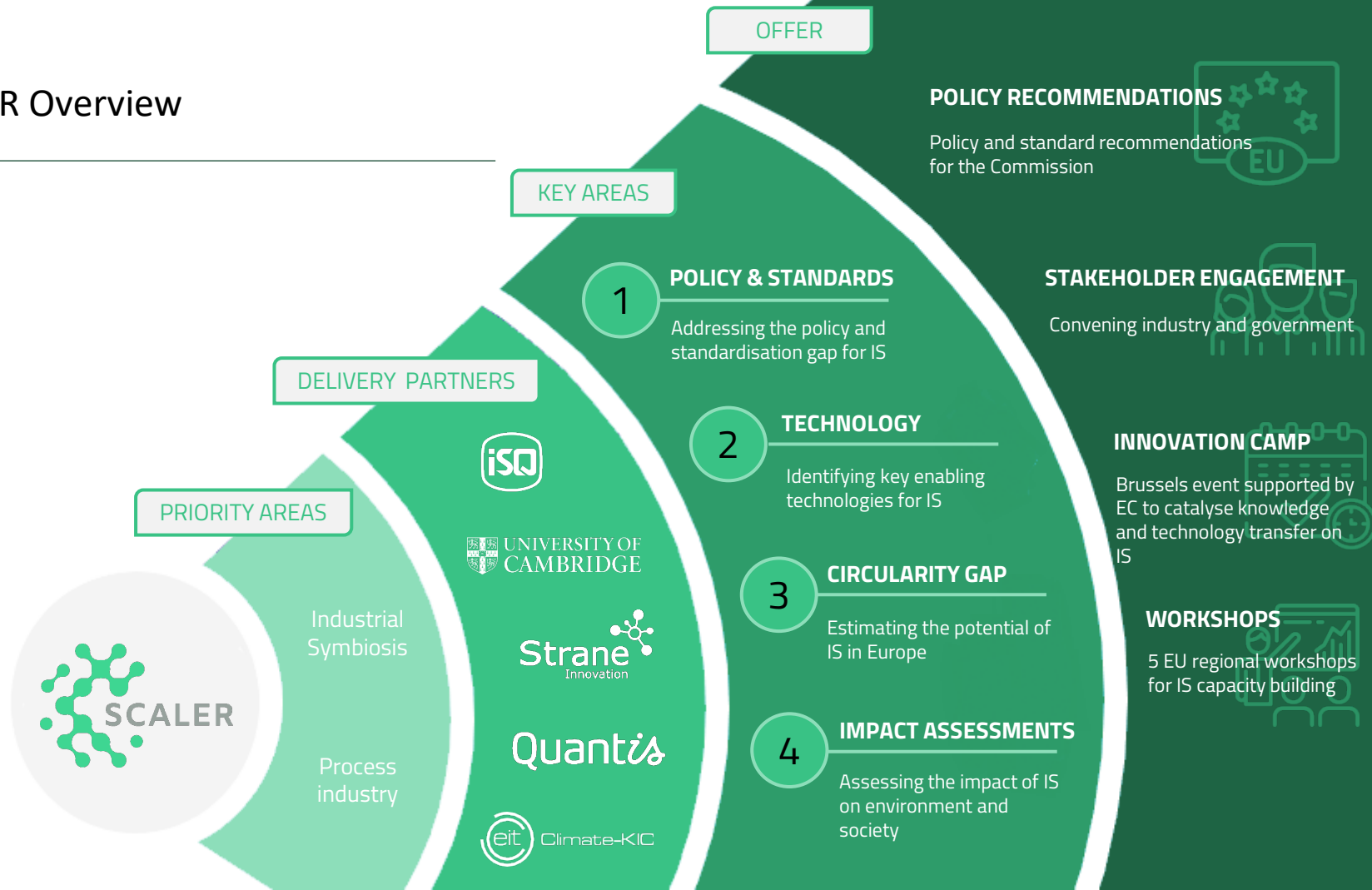


This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement no 768748



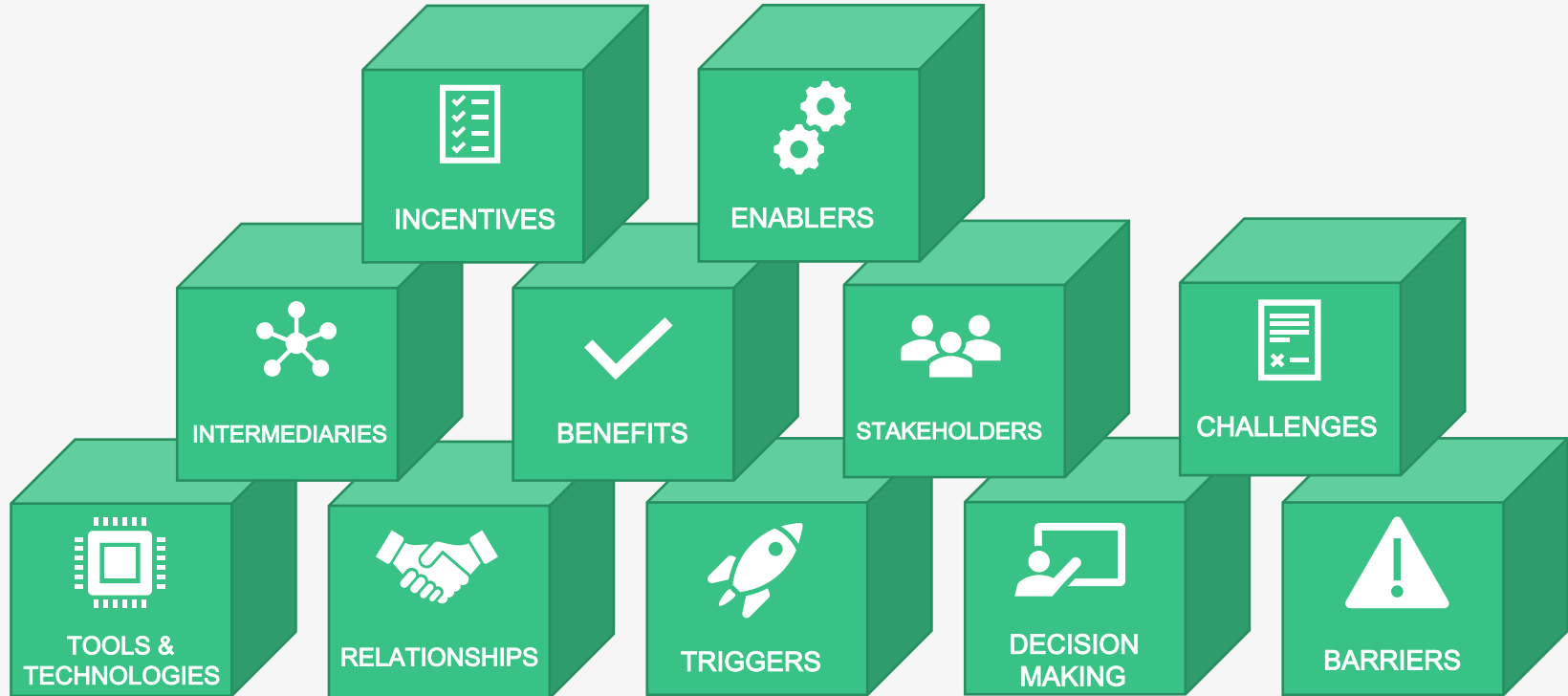
Sustainable Process Industry through
Resource and Energy Efficiency

SCALER Overview

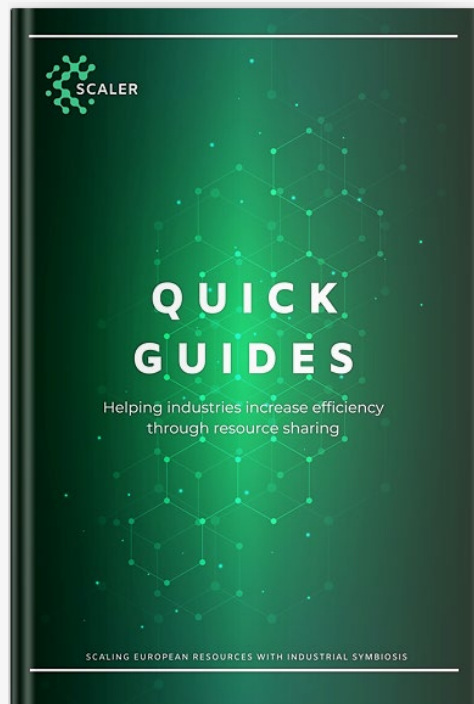


Research on state of the art

What did we look at?



Quick Guides



Download at scalerproject.eu/resources/guides-outlooks



25 case studies

Among which...



25 case studies

Among which...

The West Midlands Industrial Symbiosis Programme (WISP), West Midlands, UK

Relvão Eco Industrial Park,
Municipality of Chamusca,
Portugal

New Hope Sugar Co., Ltd. , China

Kawasaki Eco-town, Japan

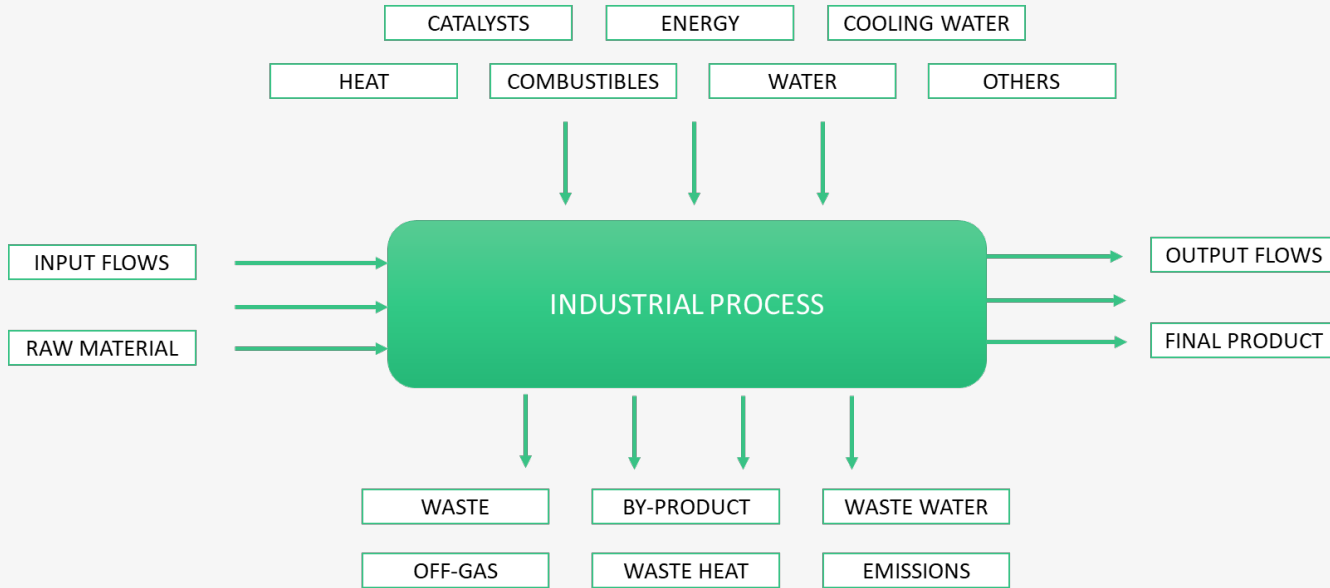
The Kwinana Industrial Area,
Western Australia

Read the report

<https://www.scalerproject.eu/resources/reports>

Flows & Synergies : Identification, Characterisation & Assessment

Systemic approach

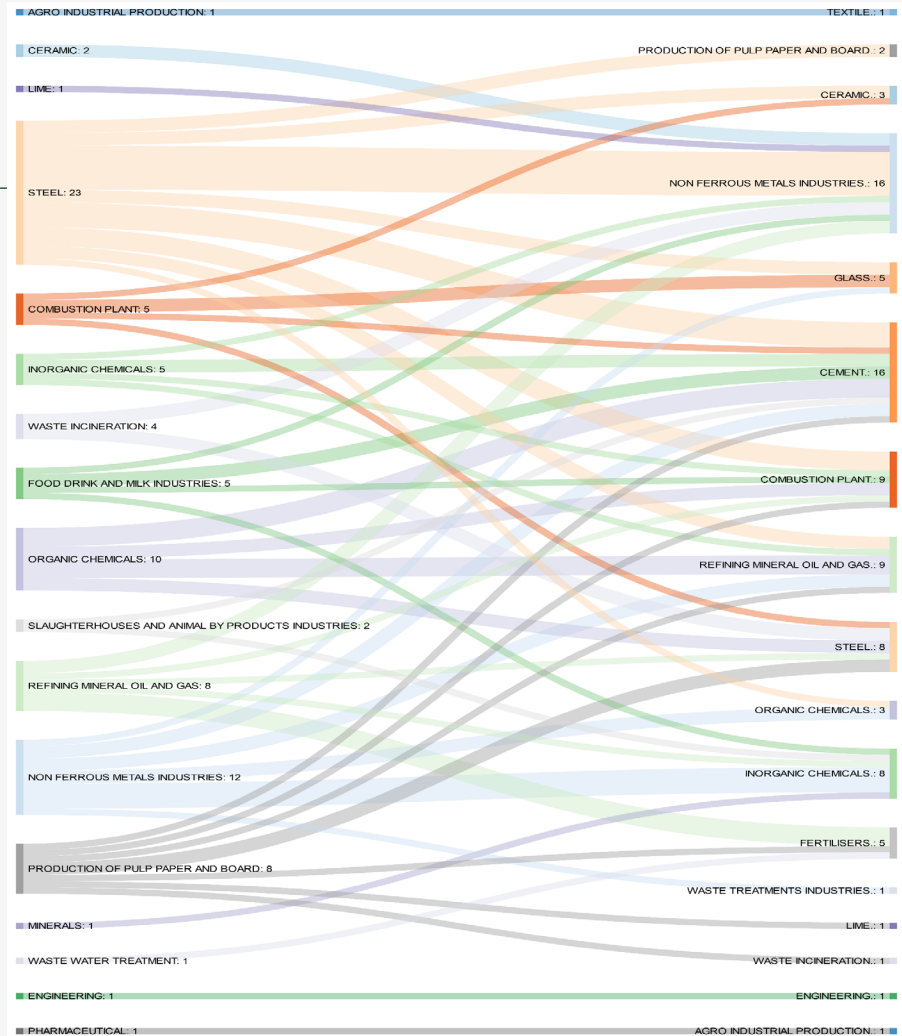


QUANTITATIVE COLLECTED DATA

- Sector annual flow rate
- Number of facilities
- Process annual flow rate
- Number of processes
- Inputs flow rate
- Outputs flow rate
- Flows state of matter
- Flow composition
- Resource composition
- Process temperature
- Flow characteristics : pH, LVH, temperature, conductivity

Results

List of 100 varied and promising synergies



IF THE ENTIRE
100 SYNERGIES
PRESENTED
WERE TO BE
FULLY
IMPLEMENTED
IN EUROPE.....

122 M

TONNES CO₂-EQ
could be saved

33.5 B€

VALUE ADDED
could be created

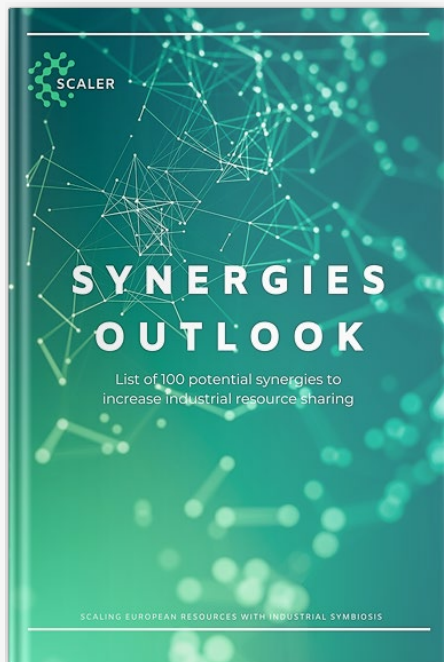
350 000

DIRECT JOBS
could be generated

7 500 000 M€

CARBON TAX
could be reduced

Synergies outlook



Download at scalerproject.eu/resources/guides-outlooks

01 ELEMENT OF INTEREST: HYDROGEN EMITTING SECTOR & PROCESS STEEL CORE OVEN PLANTS Recover coke oven gas from coke ovens and extract hydrogen to provide to petrochemical industries. TECHNICAL FEASIBILITY INDUSTRIAL SCALE HIGH TECHNICAL REQUIREMENTS VALORISATION PROCEDURE HYDROGEN SEPARATION TECHNOLOGY PSA (PRESSURE SWING ADSORPTION)	RECEIVING SECTOR & PROCESS REFINING MINERAL OIL & GAS HYDROCRACKING PROCESS Recover coke oven gas from coke ovens and extract hydrogen to provide to petrochemical industries. TECHNICAL FEASIBILITY INDUSTRIAL SCALE LOW TECHNICAL REQUIREMENTS VALORISATION PROCEDURE HYDROGEN SEPARATION TECHNOLOGY FRACTIONAL DISTILLATION	03 ELEMENTS OF INTEREST: ACETALDEHYDE - DIETHYL ETHER - ETHYL ACETATE - ETHYL - PROPIONATE EMITTING SECTOR & PROCESS ORGANIC CHEMICALS ETHYL ACETATE PRODUCTION Recover waste fuels from ethyl acetate cleaning operations and send it to the cement sector for clinker kiln combustible supply. TECHNICAL FEASIBILITY INDUSTRIAL SCALE LOW TECHNICAL REQUIREMENTS VALORISATION PROCEDURE ACIDIC ORGANIC FRACTIONS SEPARATION TECHNOLOGY FRACTIONAL DISTILLATION	RECEIVING SECTOR & PROCESS CEMENT CLINKER BURNING Recover waste fuels from ethyl acetate cleaning operations and send it to the cement sector for clinker kiln combustible supply. TECHNICAL FEASIBILITY INDUSTRIAL SCALE LOW TECHNICAL REQUIREMENTS VALORISATION PROCEDURE ACIDIC ORGANIC FRACTIONS SEPARATION TECHNOLOGY FRACTIONAL DISTILLATION
02 ELEMENT OF INTEREST: METHANOL EMITTING SECTOR & PROCESS STEEL CORE OVEN PLANTS Recover coke oven gas from coke ovens and extract methanol to provide to petrochemical industries. TECHNICAL FEASIBILITY INDUSTRIAL SCALE HIGH TECHNICAL REQUIREMENTS VALORISATION PROCEDURE METHANOL SYNTHESIS FROM COG TECHNOLOGY Lurgi Shell AND TUBE REACTOR	RECEIVING SECTOR & PROCESS REFINING MINERAL OIL & GAS ISOMERISATION PROCESS Recover coke oven gas from coke ovens and extract methanol to provide to petrochemical industries. TECHNICAL FEASIBILITY INDUSTRIAL SCALE HIGH TECHNICAL REQUIREMENTS VALORISATION PROCEDURE METHANOL SYNTHESIS FROM COG TECHNOLOGY Lurgi Shell AND TUBE REACTOR	04 ELEMENT OF INTEREST: COKE EMITTING SECTOR & PROCESS STEEL CORE OVEN PLANTS Recover pure coke from steam crackers cleaning flows and provide to the steel sector. TECHNICAL FEASIBILITY INDUSTRIAL SCALE LOW TECHNICAL REQUIREMENTS VALORISATION PROCEDURE COKE RECOVERY FROM DECKING OF THE CRACKER TUBES TECHNOLOGY N/A	RECEIVING SECTOR & PROCESS STEEL SINTER PLANTS MANUFACTURING Recover pure coke from steam crackers cleaning flows and provide to the steel sector. TECHNICAL FEASIBILITY INDUSTRIAL SCALE LOW TECHNICAL REQUIREMENTS VALORISATION PROCEDURE COKE RECOVERY FROM DECKING OF THE CRACKER TUBES TECHNOLOGY N/A

Get involved!



Visit our website

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Keep abreast of the latest information on industrial symbiosis by joining our newsletter: <http://bit.do/scalerproject-newsletter>

Contact us

Need more information or want to work with us? Contact us at info@scalerproject.eu to get in touch.



An aerial photograph of a modern city, likely Shanghai, featuring a wide, multi-lane highway with several cars. The city is characterized by numerous tall, modern skyscrapers with glass facades. A large, curved building with a distinctive architectural design is prominent on the right side. The foreground and middle ground are filled with lush green trees and landscaped areas. The entire image is overlaid with a semi-transparent blue filter.

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