

Green economy and local green deals

Thematic introduction

June 7th, 2021



Joining us today



Hauke Engel

Partner
McKinsey & Company
Frankfurt, Germany



Elsa Durieux

Senior Officer Sustainable
Economy & Procurement
ICLEI Europe



Focko Imhorst

Associate Partner
McKinsey & Company
London, UK



Lena Tsipouri

ICC Lead expert for the cities of
Cities of Patras, Tripolis,
Corinth and Trikala



Katrien Rycken

Director
Leuven 2030



Joshua Ciba

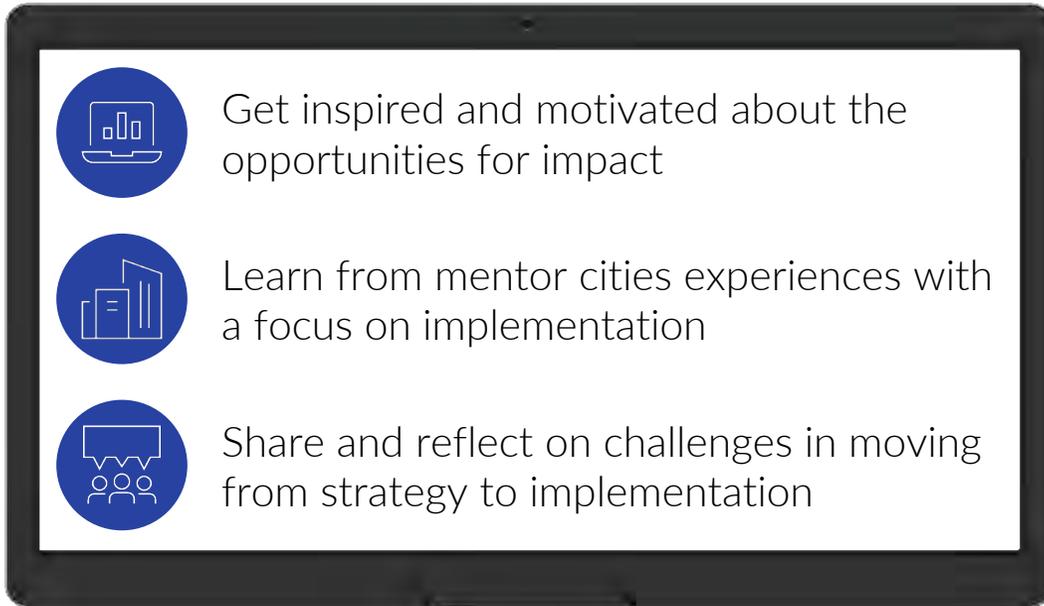
BIM Manager
City of Hamburg



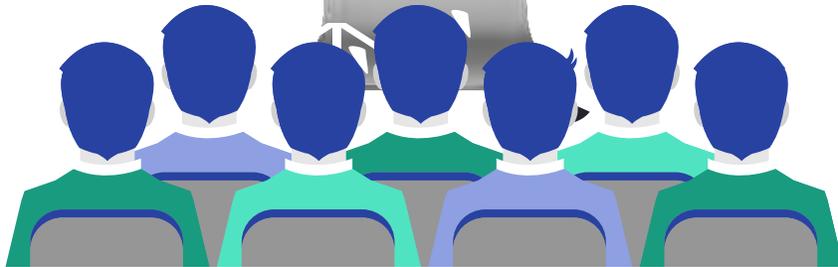
**Sebastian Holmgård
Christophersen**

Innovation Consultant
City of Aarhus

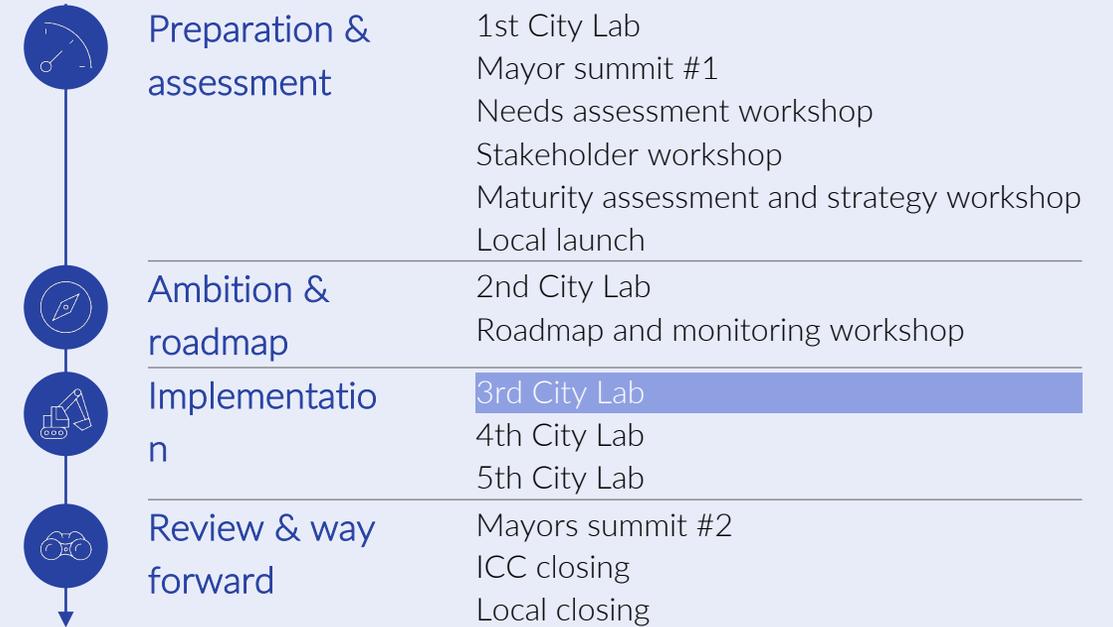
Objectives of this session



-  Get inspired and motivated about the opportunities for impact
-  Learn from mentor cities experiences with a focus on implementation
-  Share and reflect on challenges in moving from strategy to implementation



Where we are at in the ICC



Recap: this theme has two interacting elements

Green Economy ... Local Green Deals

Delivering net zero

- Assessing technical trade-offs
- Scaling solutions
- Creating economic growth through decarbonisation



Defining the policy

- Creating effective local policy
- Mobilising ecosystems
- Connecting with EU agenda

Before we dive in, where is everyone from?



Green economy and local green deals

Mentor cities

Including: Nice, Porto, Busan, Mannheim, Amsterdam

Core Cities

Including: Aix-en-Provence, Alcobendas, Alcoy, Algeciras, Alicante, Bialystok, Bistrita, Budapest, Bytom, Cartagena, Castello de la Plana, Catanzaro, CA du Pays de Saint-Omer, CA Paris-Saclay, Corfu, Galati, Gava, Gdansk, Guimaraes, Iasi, Issy-les-Moulineaux, Jyväskylä, Leuven, Logrono, Mantova, Metropole de Lille, Metropole Rouen Normandie, Molina de Segura, Pamplona, Patras, Pescara, Pori, Skelleftea, Torrent, Ulm, Vratsa, Velika Gorica

Thematic workshop – Green economy and local green deals | Suggested agenda

PRELIMINARY - FOR DISCUSSION

				
Schedule	Agenda item	Format	Lead	Suggested activities
10:00 – 10:05	Welcome, direction setting for the day	Presentation	Hauke Engel, McKinsey, Thematic Network Coordinator	<ul style="list-style-type: none"> • Introduction to day's objectives, setting the structure of the two parts of the theme
10:05 – 10:45	Topic 1: Local Green Deals	Provocation Expert presentation Q&A	Elsa Durieux, ICLEI Thematic Network Coordinator Lena Tsipouri, Lead Expert Katrien Rycken, City of Leuven	<ul style="list-style-type: none"> • TNC kicks off with a recap of local green deals (~5 mins) • Experts speak on their experiences and learnings relevant to the sub-theme (~5-10 mins each) • Q&A chaired by host (~15 mins)
10:45 – 10:50	Topic 2: Green economy – overall reflections	Presentation	Hauke Engel, McKinsey	<ul style="list-style-type: none"> • McKinsey expert reflects on early topics seen in city thematic expert discussions and roadmap deliverables (~5 mins)
10:50 – 11:15	Topic 2: Green economy - Retrofitting	Provocation Mentor presentation Q&A	Focko Imhorst, McKinsey Joshua Ciba, City of Hamburg	<ul style="list-style-type: none"> • McKinsey expert kicks off with a big picture provocation on what kinds of solutions we are talking about in this theme (~5-10 mins) • Mentor city speak on their experiences and learnings relevant to the sub-theme (~5-10 mins each) • Q&A chaired by host (~10 mins)
11:15 – 11:25	Topic 3: Green economy – Circular economy	Mentor presentation Q&A	Sebastian Holmgård Christophersen, City of Aarhus	<ul style="list-style-type: none"> • Mentor city speak on their experiences and learnings relevant to the sub-theme (~5-10 mins each) • Q&A chaired by host (~10 mins)
11:25 - 11:30	Closing remarks	Presentation	Hauke Engel, McKinsey, Thematic Network Coordinator	<ul style="list-style-type: none"> • Next steps • Feedback collection

7th June 2021

Local Green Deals

Update on the ICC Blueprint and inspiration from ICC cities



10:05

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10:15

Local Green Deals update

Elsa Durieux
Senior Officer, ICLEI Europe



Video and audio from this ICC meeting will be recorded and might be made publicly available or shared with other ICC participants and support staff.



Local Green Deals- what happened since last city lab

- **21 April 2021: Consultation session on the LGD Blueprint: ICC cities and lead experts feedback**
- **27 May 2021: EU Social Economy Summit: Local Green Deals: what role for Cities, Local and Social Economy stakeholders?**
- **March-June 2021: ICC Blueprint on Local Green Deals: development and finalisation**

Refresher: What is a Local Green Deal?

- Most cities already have strategies and policies supporting the goals of the EU Green Deal
- But they need better integrated governance and delivery mechanisms to accelerate and scale-up implementation → **Local Green Deals**
- A Local Green Deal supports effective implementation, based on **4 founding principles**

LGDs: 4 key principles



Local Green Deals in the ICC

Most ICC cities already have **strong foundations** to develop LGDs, including:

- A commitment to sustainability
- Existing roadmaps, policies, goals and initiatives
- Good relationships with local stakeholders

Adopting a Local Green Deal approach can help:

- Support the delivery of your city's ICC roadmap
- **Accelerate and scale-up** your city's sustainable transformation

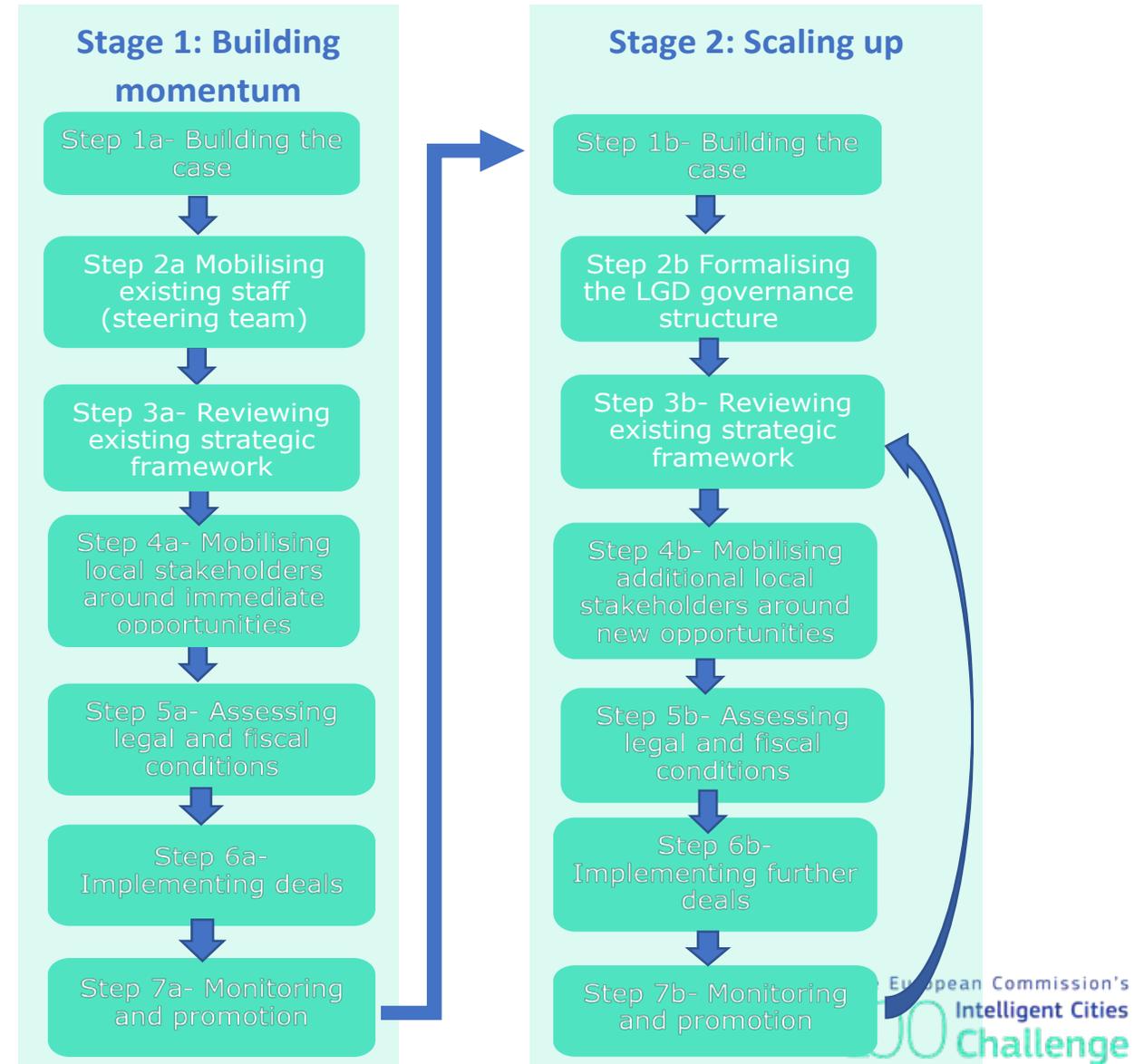
Green economy and Local Green Deals



The ICC Blueprint on Local Green Deals

- Upcoming guidance introducing the principles of a LGD (June 2021)
- **7 steps** approach to help cities get started with a LGD
- **8+ best practice examples** from cities pioneering LGD mechanisms to deliver their sustainability goals
- Highlighting **financing opportunities** for LGDs

LGDs: a step-by-step approach



Upcoming events

- **1-17 June 2021: 3rd ICC City Lab – Validation of the Local Green Deals Blueprint**
- **22 June 2021: Mayors event on Local Green Deals – A blueprint for action-
*calling for statements***
- **September 2021: Upcoming Call for proposals: SMP-COSME-2021 - Social Economy and Local Green Deals supporting SMEs to become more resilient**



The Intelligent Cities Challenge is funded by COSME, the EU programme for the Competitiveness of Enterprises and SMEs

The European Commission's
100 Intelligent Cities
Challenge

10:15

-

10:25

Local Green Deals: the role of inter-city collaborations

Lena Tsipouri

ICC Lead Expert- Cities of Patras, Tripolis and Corinth, Trikala



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3rd Living Lab

Thematic workshop – Green economy and local green deals |

The prospects of a Greek ICC network

Lena Tsipouri

Outline

- What is the Greek ICC?
- Lessons from the Green ambitions in Greek regions
- From Green Greek lessons to broader ICC lessons
- Ideas for the next ICC Phases



The Greek ICC Network

An initiative by the City of
Thessaloniki/V.Latinos-ICLEI
immediately embraced by all 11 Greek
regions

A first meeting in May with some
clear common points

- Next steps for added value
(Beyond ICC, Rise of Ambitions)
- Municipal Commitment needed
- Common Implementation
problems (bureaucracy,
discontinuity, regulatory barriers,
financial dependence)

The challenge is in the next
meetings



The Greek ICC Network: selected LGD- relevant ambition statements

Chalkida	Smart and sustainable tourism model, Scaling up renewable waste management & energy efficiency solutions,
Corfu	Establish a well-based separate collection for most of the waste categories usually applies and ensuring sustainable management of resources based on the 3Rs. Developing a network of smart sensors to improve the quality of the urban environment.
Heraklion	Introduce new services / processes / business approaches for SMEs in the tourism sector Reducing the "energy footprint" of the Municipality Setting up a smart and green mobility and transport network
Ioannina	
Kavala	Optimization of the Core City Infrastructure and Tourism Superstructure Promoting Resilience, Green and Blue Sustainable Development and Social Cohesion
Alimos and Palaio Faliro	To create and nurture an ecosystem of local stakeholders that will co-create and push forward the implementation of the Strategy and Action Plan for the new, Smart Tourism Destination.
Patras	Adopt digital solutions for making Patras a pole for citizens, visitors' attraction and tourists' destination
Thessaloniki	Support climate resilience and disaster management
Trikala	Enable a common digital platform for sustainable mobility activities Utilize common tourism organization and digital tools to highlight local assets and safety, attract digital nomads and virtual tourists
Tripolis-Corinthos	Green economy & local green deals. Green and digital transition in tourism.
Vari-Voula-Vouliagmeni	Promoting energy efficiency and optimal waste management systems Setting up a holistic smart and green mobility and transport framework Establishing a holistic framework for smart tourism

Green common elements in the Greek cities

- 10/11 cities have explicit Green ambitions
- Most Green ambitions are linked to tourism, followed by mobility
- Green is less visible in Solutions than in Ambitions
- There is a national call for proposals for implementation of an integrated strategic planning for development and social solidarity by local authorities. Many applications from all eligible Greek cities include green transition measures. There is no explicit coordination between these applications and ICC (for many reasons)
- Are these lessons unique to LGDs or connected to the ICC diversity?

- The role of cities (proximity matters but also capacity, transparency and accountability matter): Greek regions lack financial and human resources
- There are trade-offs in ICC, and the optimal solution is not always feasible (praising the flexibility of the network)
 - urgency for cities to deliver on sustainability versus strategise
 - complexity of encompassing versus simple and ad hoc
 - short versus long-termism
- Differences in governance: the national regulatory framework is determinant. What about cities those not disposing of the political will, the means and the other “Key Principles”? Can a national network help? Are they additional layer of complexity or the appropriate response to empowering cities?
- Real digital transition (change of institutions, including routines) needs ICC to become a persistent leverage to overcome accumulated challenges; can we do it?

From Green
lessons to
broader ICC
lessons

Some suggestions for discussion for cities with limited degrees of autonomy

- ICC considerably helps design, consultation and small projects but struggles to help in the integrated aspects of the EGD
- Greek cities struggle for activating public procurement and leveraging private funds
- The ICC does not have the mandate to intervene at higher levels
- National ICC-inspired City networks might be able to do this?
- The ICC may try to be more proactive in guiding/supporting funding (European Green Deal Call etc.)

Thank you for your attention

lana@tsipouri.opix.ai

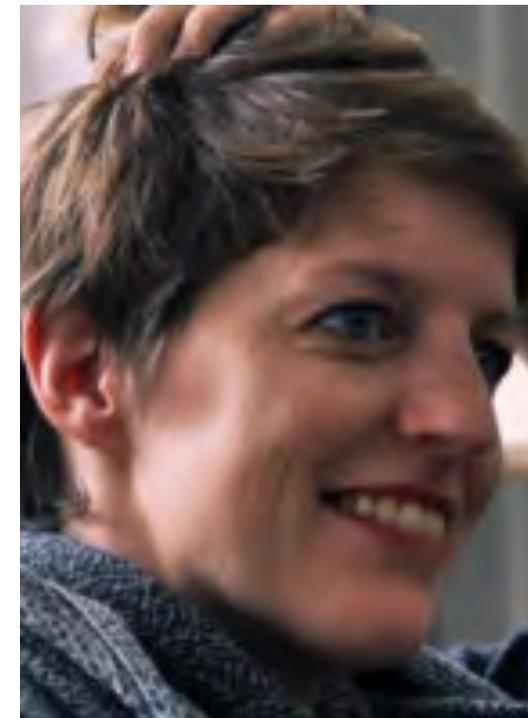
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10:35

Building delivery structures for a Local Green Deal

Katrien Rycken
Director, Leuven 2030



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ICC City Lab Session
07/06/2021 – Local Green Deals

Towards a climate neutral Leuven
Online presentation



LEUVEN



SCIENCE BASED



**LEUVEN
2030**
MEER WETENSCHAP, MEER TOEGANG

BUSINESS

**LOCAL
GOVERNMENT**

**KNOWLEDGE
INSTITUTIONS**

CIVIL SOCIETY

SHARED URBAN MISSION



SHARED URBAN MISSION







ROADMAP

2025-2035-2050

naar een klimaatneutraal Leuven



6 CLUSTERS 13 PROGRAMS

1. Accelerated building renovations
2. Sustainable mobility
3. Local generation of green energy
4. Sustainable consumption
5. Green and resilient city
6. Facilitating the transition



Mohamed Ridouani
Burgemeester



Luc Sels
Rector



Peter van Biesbroeck
Algemeen Directeur



Frank Vanbrabant
CEO



Rudi Beeken
Voorzitter



Luc Van den hove
President & CEO



Marc Vandewalle
Algemeen Directeur



Eric Lauwers
CEO



Lies Corneille
Voorzitter



Fabio Sala
CEO AB InBev Belgium



Wim Robberecht
CEO



Roger Kesteloot
Directeur-Generaal



Sonja De Becker
Voorzitter



Philip Marck
Directeur regio Vlaams-Brabant



Franky Depickere
Voorzitter





SNOWFLAKE MODEL

building the engine



Distributed leadership

NAAR EEN KLIMAATNEUTRAAL LEUVEN MET DEZE PROGRAMMAVERANTWOORDELIJKEN



Anne Goidts

Woningen renoveren



Bert Smits

Governance en financiering



Caroline Huyghe

Duurzaam en gezond eten



Dries Vleugels

Woningen renoveren



Ewoud Monbaliu

Iedereen betrekken in de
klimaattransitie



Hanne Wouters

Groene en veerkrachtige ruimte



Ilse Premereur

Groene energie opwekken



Jan Aerts

Niet-woningen renoveren ·
Nieuwe gebouwen
klimaatneutraal bouwen



**Jessie Van
Couwenberghe**

Selectiever consumeren



Johan Van Reeth

Omslag naar duurzame
vervoerswijzen · Het Leuvense
vervoer vergroenen



Luc Alaerts

Kennisopbouw en monitoring



Marleen Van Kerckhove

Governance en financiering



Michèle Jacobs

Iedereen betrekken in de
klimaattransitie



Stephan Reniers

Efficiënter omgaan met de
ruimte in de Leuvense
stadsregio



Stijn Adam

Groene energie opwekken



Tim Asperges

Omslag naar duurzame
vervoerswijzen · Het Leuvense
vervoer vergroenen



Wim Verheyden

Groene en veerkrachtige ruimte



Katrien Rycken

Roadmapmanager



Healthy, Clean Cities

Deep Demonstrations of Radical Climate Action

Webinar 03 September 2019

Economic Case for Carbon Neutrality & Capital Planning

 @ClimateKIC

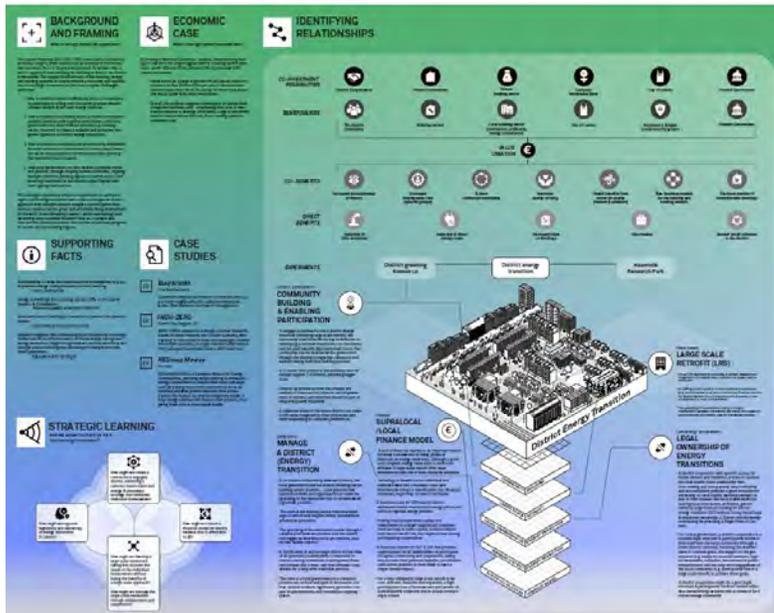


EIT Climate-KIC is supported by the
EIT, a body of the European Union

PORTFOLIO STRATEGIC EXPERIMENTS SYSTEMIC APPROACH

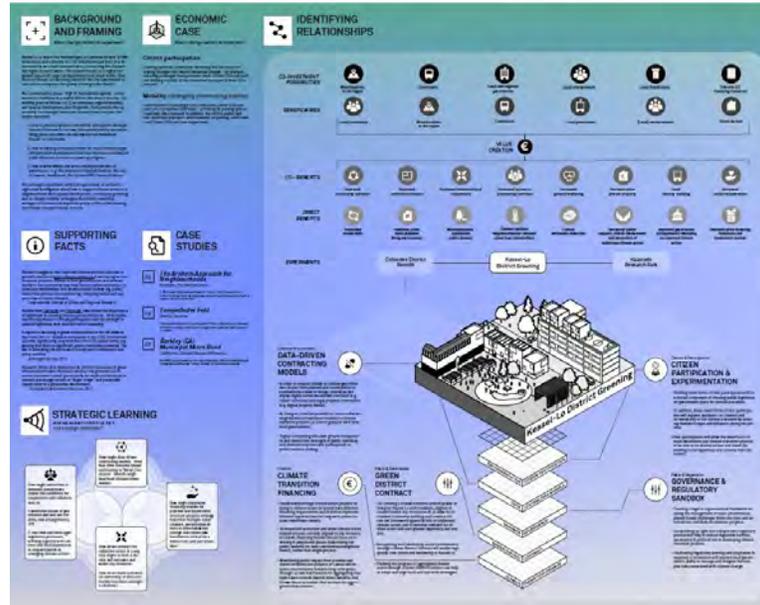
Experiment 1 - District Energy Transition

How to create a climate-positive district through community empowerment



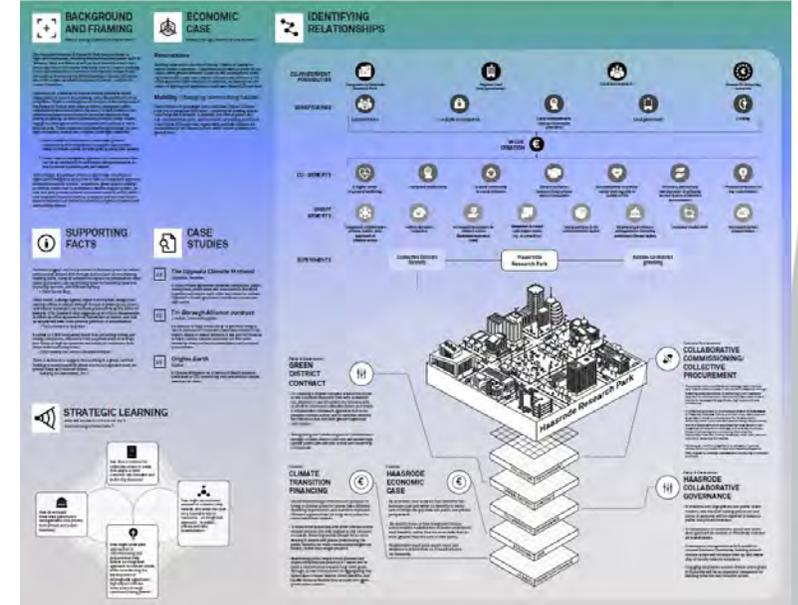
Experiment 2 - Kessel-Lo District Greening

Building a green community and mobility strategy in Kessel-Lo



Experiment 3 - Haasrode Research Park

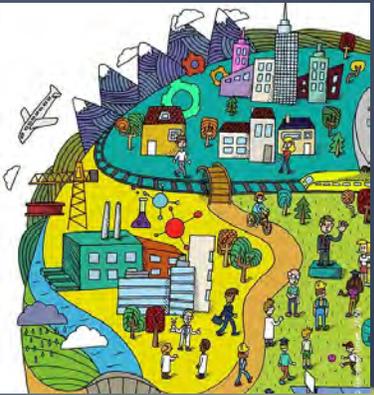
Overview of the strategic experiment of Haasrode Research Park: Aligning the private and public benefits of climate action



iCapital 2020
EUROPEAN
CAPITAL OF
INNOVATION
LEUVEN



European
Commission



EUROPEAN CITY LAB OF THE FUTURE



BrightWolves recommends a three-phased roll-out

LEUVEN CITY TRANSFORMATION FUND

"TO BE A FORERUNNER IN SUSTAINABLE INNOVATION AND THE ACCELERATION OF THE LEUVEN NET ZERO ROADMAP, WITH LOCAL IMPACT AND GLOBAL REACH, FOR THE BENEFIT OF ALL."

1

SUPPORT FUND

2

VENTURE FUND

3

INFRASTRUCTURE FUND

iCapital 2020

EUROPEAN
CAPITAL OF
INNOVATION
LEUVEN



European
Commission



CITY TRANSFORMATION STUDIO

LEUVEN
2030
HIER HET VERLEDEN, HIER TOEKOMST

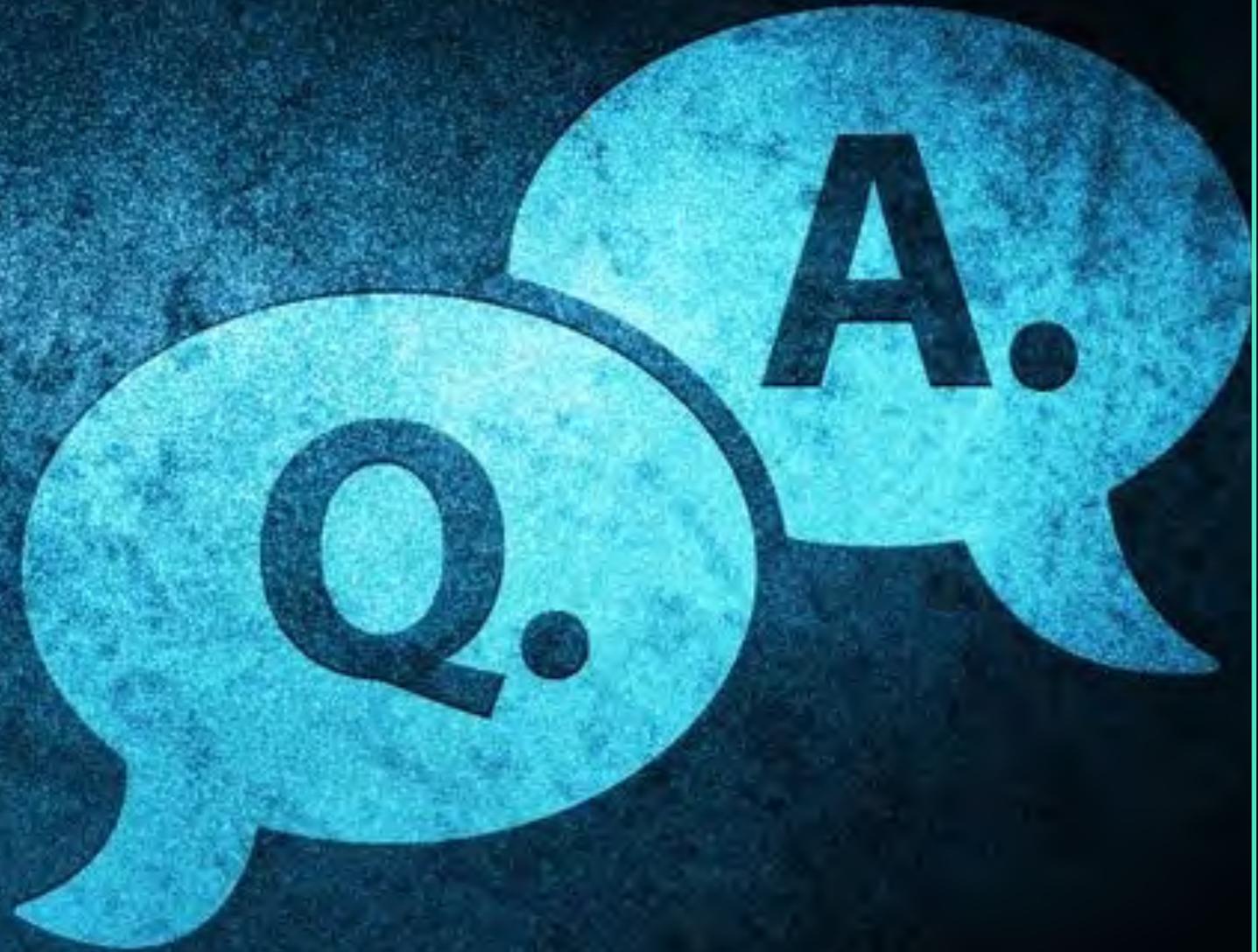
www.leuven2030.be
info@leuven2030.be

**LEUVEN
2030**

MINDER UITSTOOT, MEER TOEKOMST

Becoming a member? <https://leden.leuven2030.be/>

Q&A



7th June 2021

Green Economy

Technical perspective on decarbonising cities



10:45

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10:50

Reflections on city activities

Hauke Engel
Partner
McKinsey & Company



Video and audio from this ICC meeting will be recorded and might be made publicly available or shared with other ICC participants and support staff.



We have heard a number of common themes across the first roadmap deliverables

1



How to think about business cases for decarbonization investments?¹

2



How to help companies understand transition risks and mobilize as part of ecosystems?

3



How can I spot decarbonization opportunities that might help my region export?

4



What kind of skills will need to be in place for my roadmap to be effective?

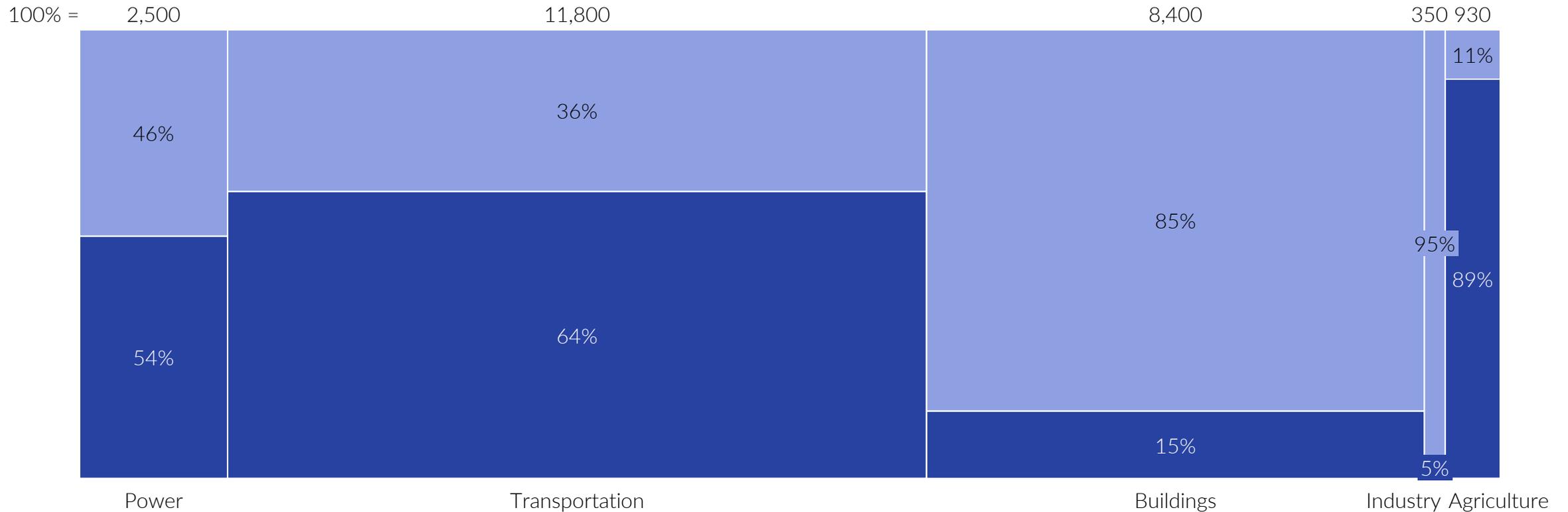
1. Note, this question is also covered by the transversal Access to Finance

1. All sectors have positive and negative business cases, but power, transportation and ag perform better on average than buildings and industry

Emissions-reduction investments by type of investment case for individual stakeholders by sector

Total CAPEX¹ in EU-27, total for 2020-50, BN EUR

■ No Standalone case
■ Standalone investment case



1. Investment cases that are NPV positive. For assumptions (including WACC and lifetime expectancy) see technical appendix
2. Profitability of infrastructure investments are not modelled as business model is often unclear and asset base is often regulated

Source: McKinsey

2. Businesses need to respond to decarbonization to stay in the game

Business needs to decarbonise to maintain competitiveness, responding to:

Changing stakeholder expectations

Talent



84% of employees are more loyal to a company that contributes to social / environmental issues

B2C customers



+30% of consumers are looking to move towards sustainable companies and products after COVID 19

B2B customers



+81% of companies stated that their commitment to sustainable has increased over 5Y

Changing market environment

New / more sustainable products are displacing 'old'



~200% p.a. annual growth rate of BeyondBurgers; alternative meat is growing 5-20x faster than beef in some EU countries

Capital is shifting to sustainability



>30% of capital is ESG; highest scoring ESG players enjoy ~1.1pp cheaper WACC; investors are becoming activists

Stringent targets are the new normal



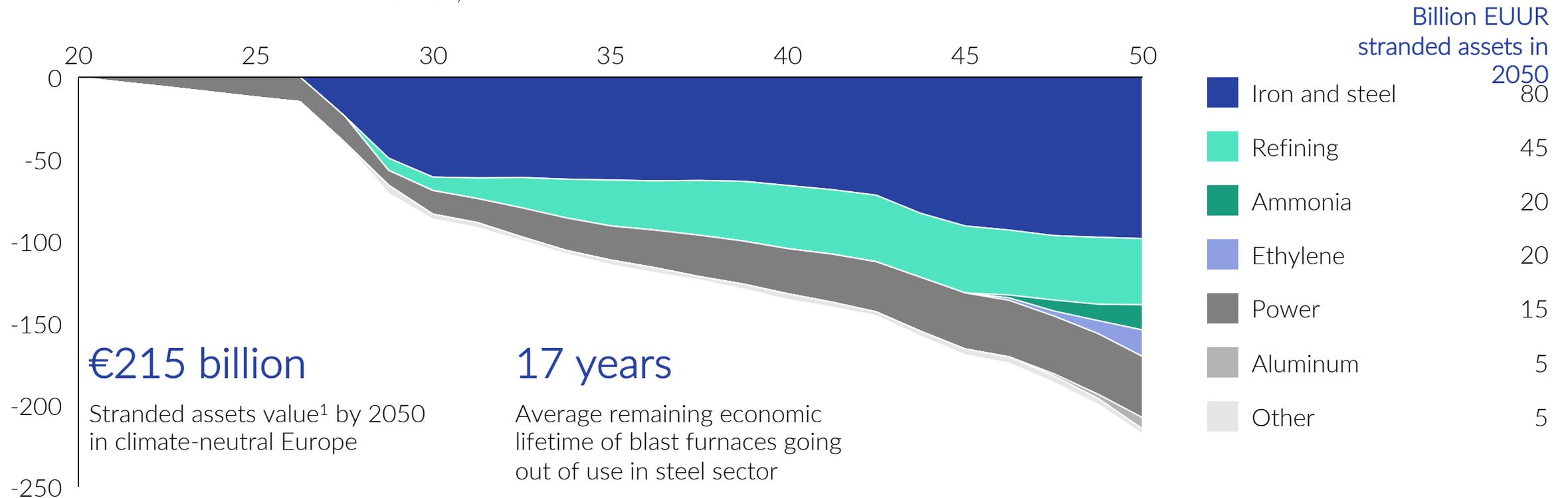
23% of Fortune 500 companies have a science-based target, up from >5% 5y ago

If businesses do not act early while options exist, a more sudden decarbonisation journey will cost more, e.g., with stranded assets

2. For the most carbon intensive industries, if they don't transition they risk significant stranded assets

The total value of stranded assets retired before the end of their lifecycle would reach €215 billion, mainly in the iron and steel and oil refining industries

Cumulative stranded asset value in EU-27, Bn EUR



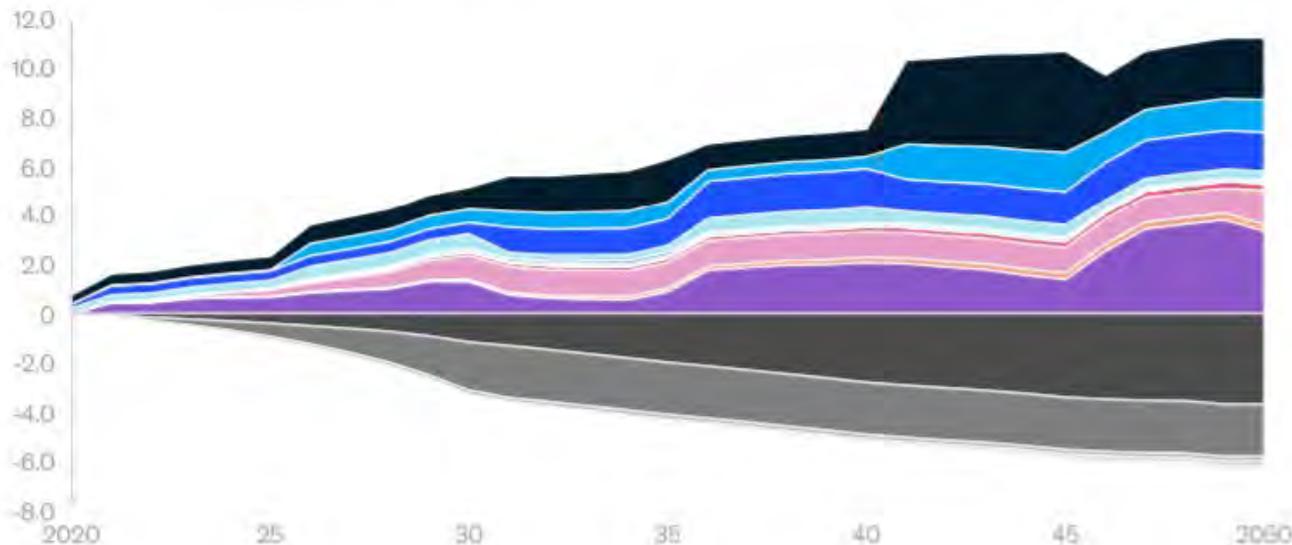
1. We calculate the "stranded" value of prematurely retired assets by multiplying the share of remaining useful life at the point of retirement with the initial capital investment. Stranded assets included in the analysis are production assets that are retired at some time prior to the end of their economic life

Source: McKinsey

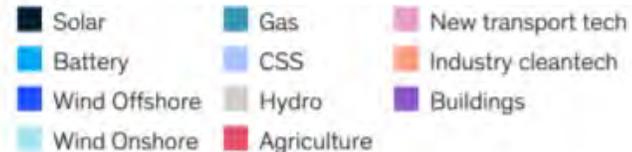
4. Green transitions inherently need more jobs, and often higher skilled ones

The EU would create approximately 11 million new jobs on the cost-optimal pathway to net-zero GHG emissions, but certain industries would experience job losses.

Total¹ job gains and losses by sector in EU-27
Millions



Gains



Losses



The new green jobs would generally be higher-skilled positions such as installing solar panels, developing hydrogen fuel cell technology, and growing genetically modified organism (GMO) crops to feed livestock.

As a result, reaching the EU's decarbonization goals would require a more educated and higher-skilled workforce.

When providing this skills training, governments and companies could take advantage of **skills overlaps** between different sectors, such as oil and gas engineers who can switch to developing offshore energy infrastructure.



In addition, two particular solution areas came up the most frequently, which we will focus on today

Theme	Retrofitting	Circular economy
Example concepts 	<ul style="list-style-type: none">How to drive up efficiency of public buildingsDistributed solar generation on buildingsThe opportunity in producing heat pumpsHow to design contracts for efficiency	<ul style="list-style-type: none">How to value waste streamsHow to manage logistics of waste collectionHow to think about waste heat in industrial contextsHow to think about R&D for new fuel tech
Things we will do today 	<ul style="list-style-type: none">Provocation from McKinsey expert Focko ImhorstMentor presentation from Hamburg	<ul style="list-style-type: none">Mentor presentation from Aarhus

10:50

-

10:55

Provocation on retrofitting

Focko Imhorst
Associate Partner
McKinsey & Company



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10:55

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11:05

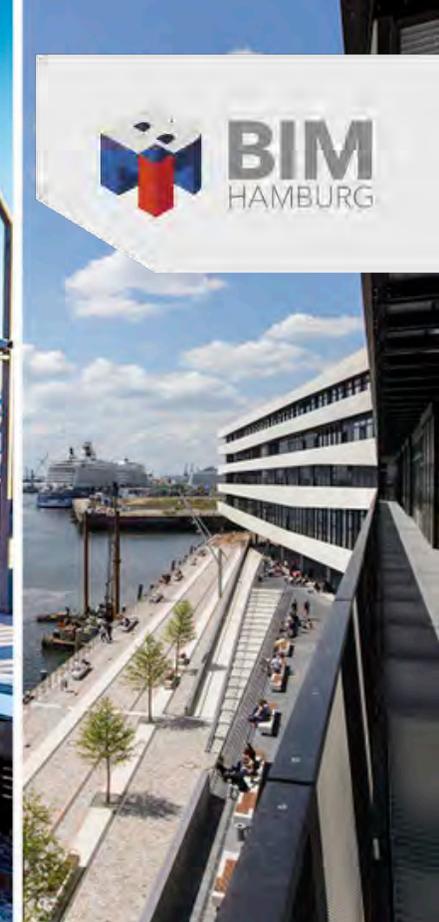
Mentor presentation

Joshua Ciba
BIM Manager
City of Hamburg



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3. ICC CITY LAB

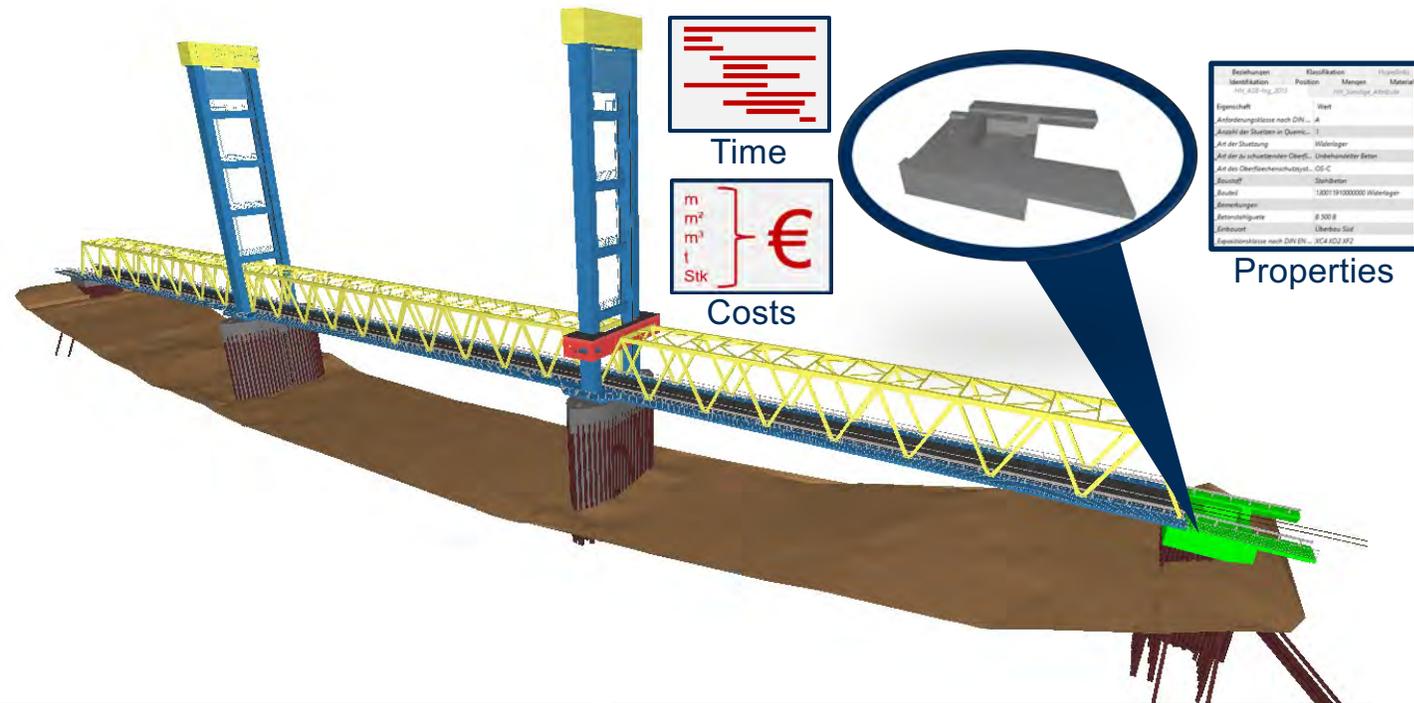
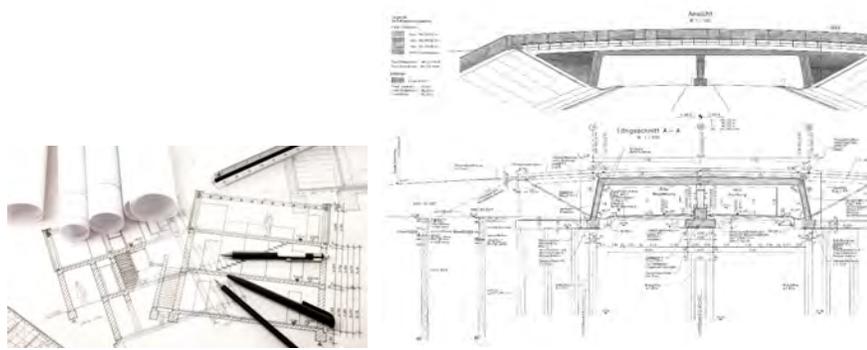
IMPLEMENTATION OF BIM IN THE PUBLIC SECTOR OF THE CITY OF HAMBURG

Joshua Ciba | BIM.Hamburg | 07.06.2021

„Building Information Modelling means a collaborative work method that creates and uses **digital models of an asset** as a basis for the consistent generation and management of information and data relevant to the asset’s life cycle as well as for the sharing or passing on of such information and data between the participants for further processing by way of transparent communication.“

Digital models of an asset (Digital Twins)

- Models of buildings linked with several information
- 2D- and 3D-Components



„Building Information Modelling means a **collaborative work method** that creates and uses digital models of an asset as a basis for the consistent generation and management of **information and data** relevant to the asset’s **life cycle** as well as for the sharing or passing on of such information and data between the participants for further processing by way of **transparent communication**.“

Information and data

- Availability of all relevant data about the model
- Knowledge about existing/available information
- Sensor information for maintenance and operation



Using digital twins to optimise the maintenance and operation of infrastructure buildings.



ensures high-quality output



minimizes resource consumption



reduces the impact on the environment

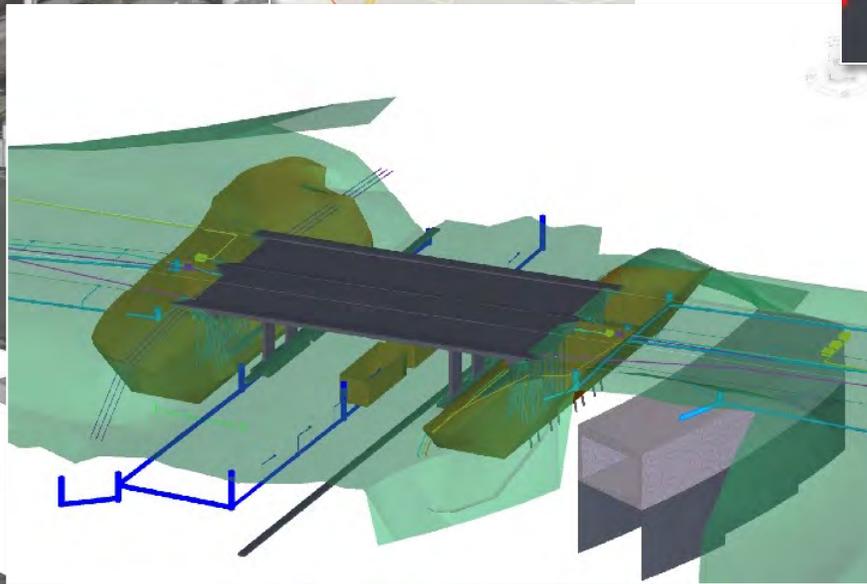
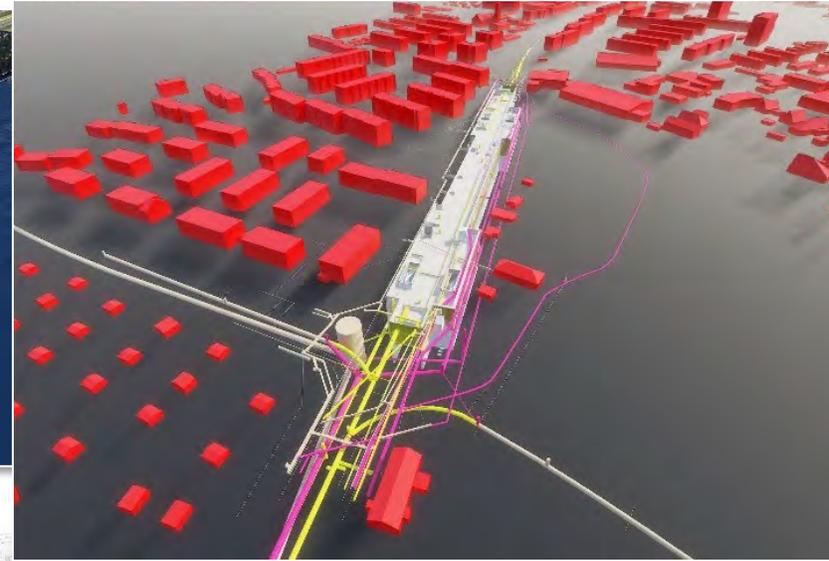
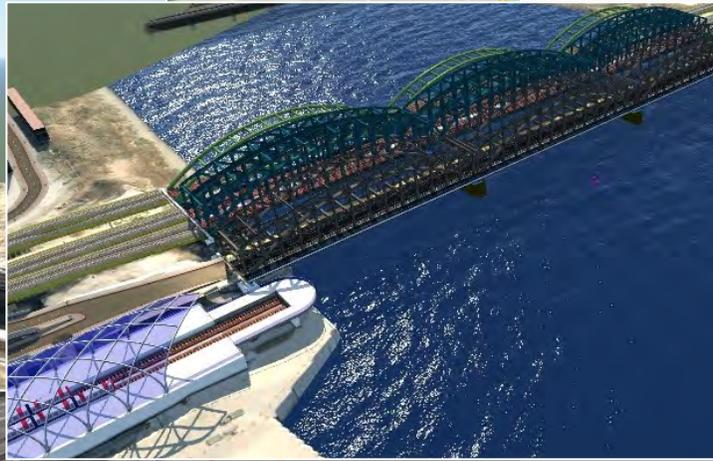
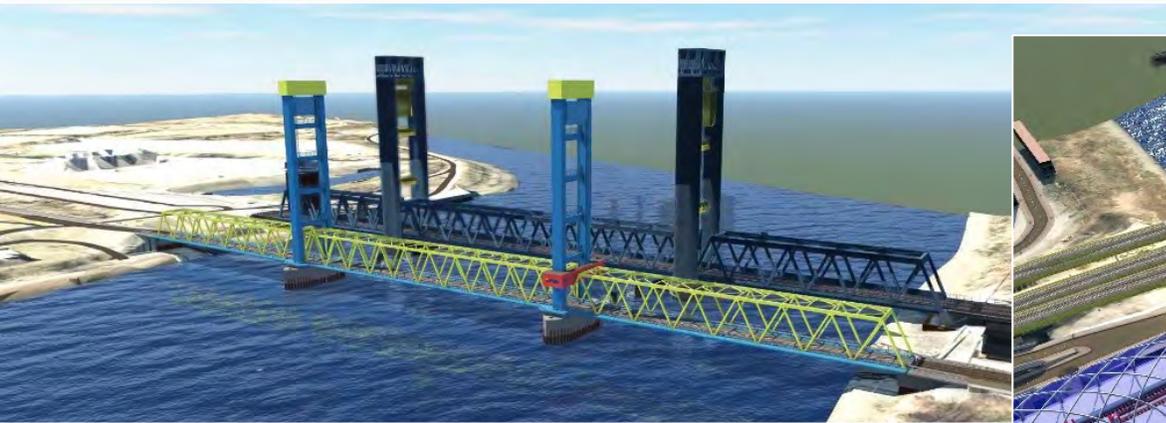


securing the future generations in terms of resources and their availability

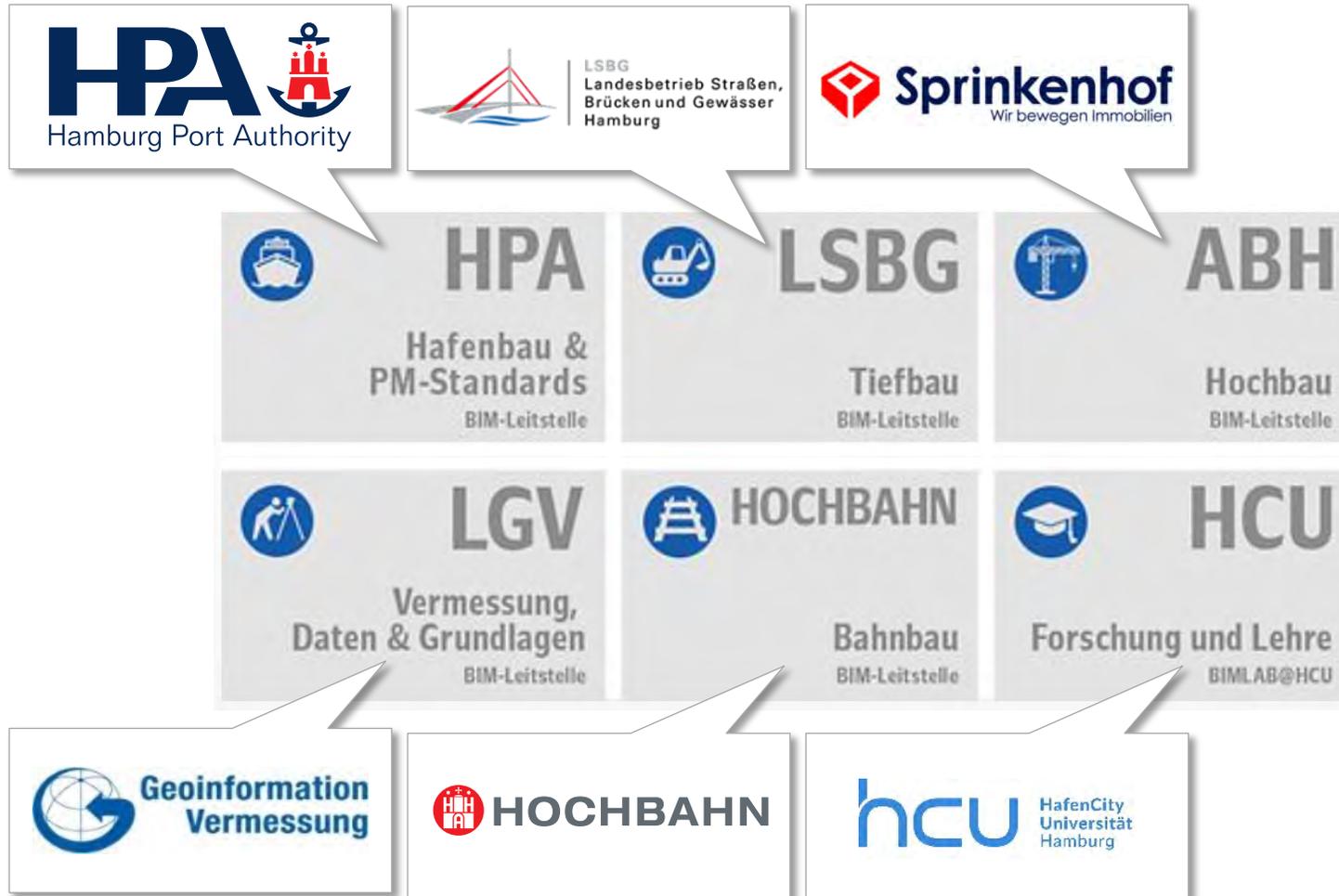


and more...

BIM.Hamburg: Implementation program for Hamburg by more than 35 pilot projects in Hamburg across all sectors of transport – trend rising!



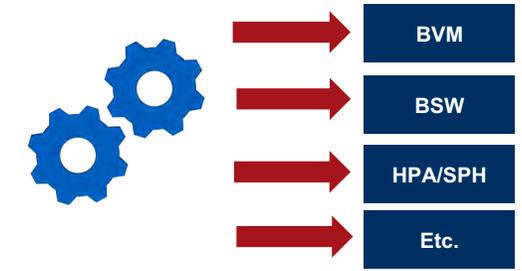
In Hamburg, 6 major organisations have established specialized BIM control centres and founded BIM.Hamburg.



BIM control centres bundle the **BIM expertise** and **develop standards** for the **entire city of Hamburg** .

The **BIM managers of the control centres** work **together** on BIM standards for Hamburg in cross-functional and **inter-authority projects**.

Process of the operative development of BIM standards in the BIM control centres and scaling process within program management



- Practicing BIM in over 30 BIM projects
- Building up BIM expertise for 5 years
- Bundling of BIM Know-How in each field of competence and developing standards
- BIM Know-How experiences based on practice!
- Synchronizations of BIM standards between administrations in cross-functional teams
- Development of best practice **BIM application recommendations** and scaling for entire Hamburg
- Evaluation of the need to change regulations concerning BIM (technical)
- Ministerial process to "elevate" the application recommendations into mandatory standards
- Evaluation of the need to change regulations concerning BIM (ministerial)



Thank you for your attention!



Contact person:



Joshua Ciba
BIM Department
Technical Division Engineering & Construction
Hamburg Port Authority AöR



Head of the WG „Wasserweg-Hafen“
BIM Verkehrswege
buildingSMART Germany

Contact:

joshua.ciba@hpa.hamburg.de

Tel.: 040 / 42847-5513

11:10

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11:20

Mentor presentation

Sebastian Holmgård Christophersen
Innovation Consultant
City of Aarhus



Video and audio from this ICC meeting will be recorded and might be made publicly available or shared with other ICC participants and support staff.



ROBOTS ARE CLEANING THE AARHUS RIVER



**CITY OF
AARHUS**



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Aarhus



- Second Largest City in Denmark
- One of Northern Europe's biggest ports
- Top ranking University
- 350.000 citizens
- European Smart City and Cultural frontrunner
- European Capital of Innovation Finalist in 2017 and 2018.
- Goal to become CO2 neutral by 2030

Challenge: Cleaning our rivers before the waste ends up in the oceans

14 LIFE
BELOW WATER



NOT SO FUN FACTS

Use of plastic, and its recycling, will have a huge impact on our future. We have identified six facts which are an unfortunate reality in 2021. Some people think our fight is unnecessary, but did you know that:

100 KG

is the amount of plastic estimated to be used by citizens in the west every year

1 MILLION

plastic bottles are bought every single minute

57.000

blue whales are the equivalent in weight of the plastic waste we throw into the oceans every year

1 MILLION

seabirds and approx. 100,000 marine mammals and turtles die as a result of plastic pollution every year

2 MILLION

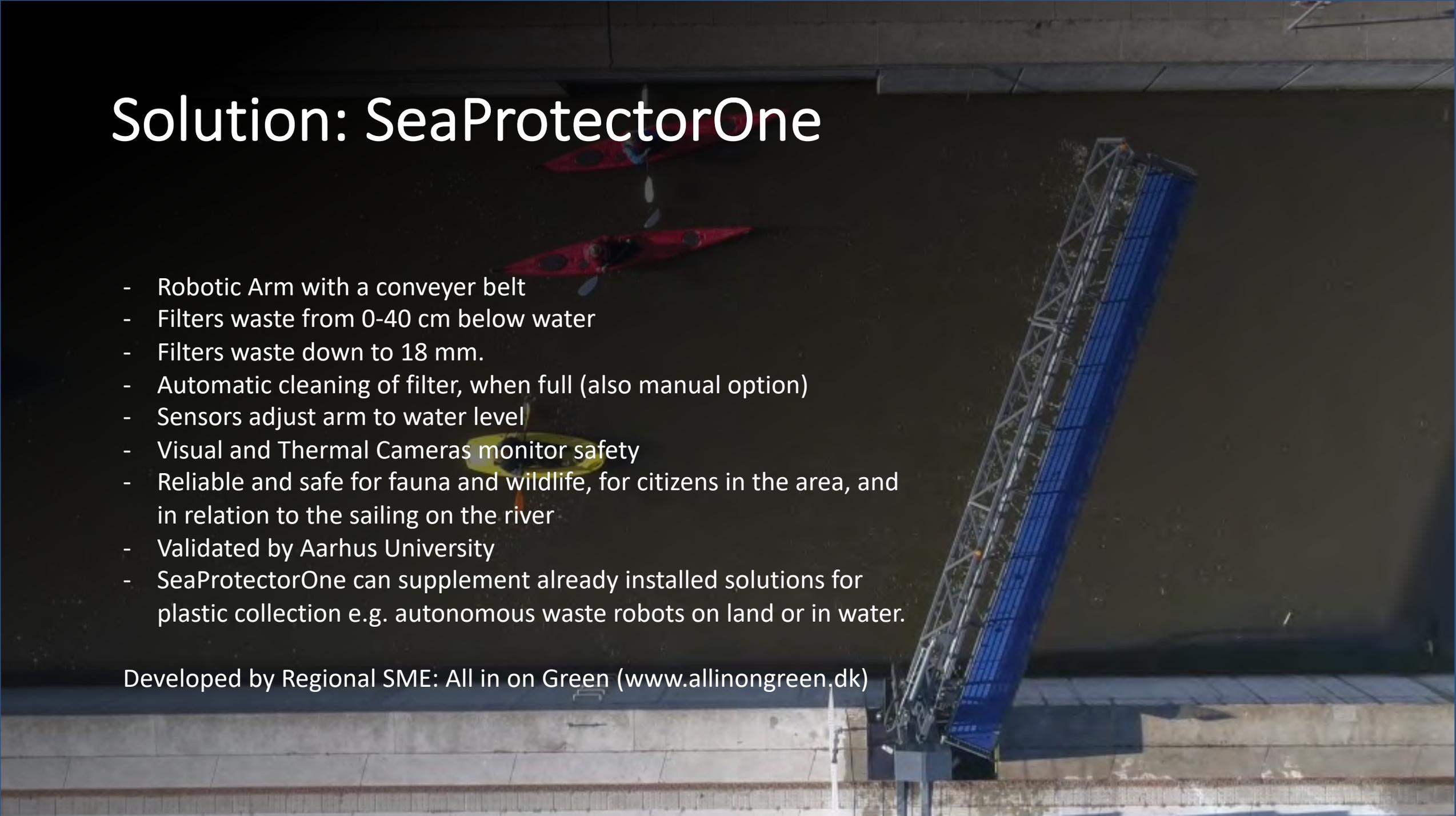
plastic bags are in use at any given time – the average period of use for a bag is 15 minutes

90 %

of all seabirds and half of all sea turtles have plastic in their stomachs



Solution: SeaProtectorOne

An aerial photograph of a river. In the upper left, two red kayakers are visible. In the lower left, a yellow kayak is also present. On the right side of the river, a large, blue, lattice-structured robotic arm extends from a concrete bank into the water. The arm is angled downwards, and its base is mounted on a concrete structure. The water is dark, and the sky is overcast.

- Robotic Arm with a conveyor belt
- Filters waste from 0-40 cm below water
- Filters waste down to 18 mm.
- Automatic cleaning of filter, when full (also manual option)
- Sensors adjust arm to water level
- Visual and Thermal Cameras monitor safety
- Reliable and safe for fauna and wildlife, for citizens in the area, and in relation to the sailing on the river
- Validated by Aarhus University
- SeaProtectorOne can supplement already installed solutions for plastic collection e.g. autonomous waste robots on land or in water.

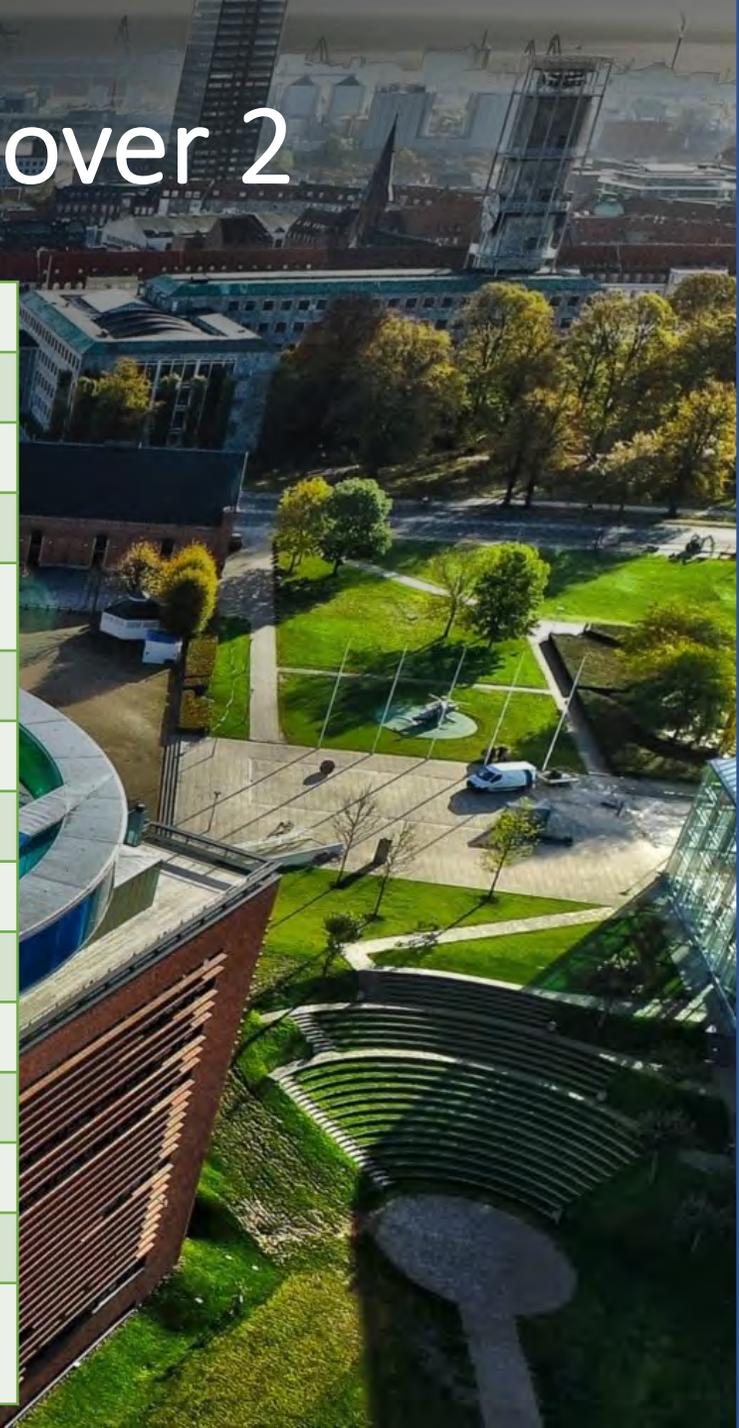
Developed by Regional SME: All in on Green (www.allinongreen.dk)

Solution: SeaProtectorOne - In Action...



Lessons learned – the data Top 15 over 2 months

Plastic foil	1679
Candy wrapping	637
Cigarette butts	505
Paper / cardboard	497
Single-use cups (cold beverages)	424
Paperbags	390
Face masks	379
Sandwich wrapping	359
Plasticbags	296
Beer/Soda cans	292
Various pieces of plastic	271
Polystyrene	197
Various odd parts 😊	144
Napkins	140
Single-use cups (hot beverages)	134



Lessons learned – public behavior



**After Covid-19
lockdown period**

Scaling: Aarhus as an innovative testbed

- Aarhus' strategy is to serve as demonstration and development partner for new innovative (Smart City) solutions in close collaboration with businesses and research institutions – especially concerning the green transition towards CO2 neutrality.
- Aarhus City Lab: Dedicated area of the city for testing solutions
- We are establishing an outdoor robot business cluster
- Ecosystem of new technology enabled waste solutions:
 - Cityshark-project: Autonomous water and air drone to collect waste and clean oil spills in the harbour.
 - Cigarette Butt Robot: Autonomous robot to collect cigarette butts in the urban environment

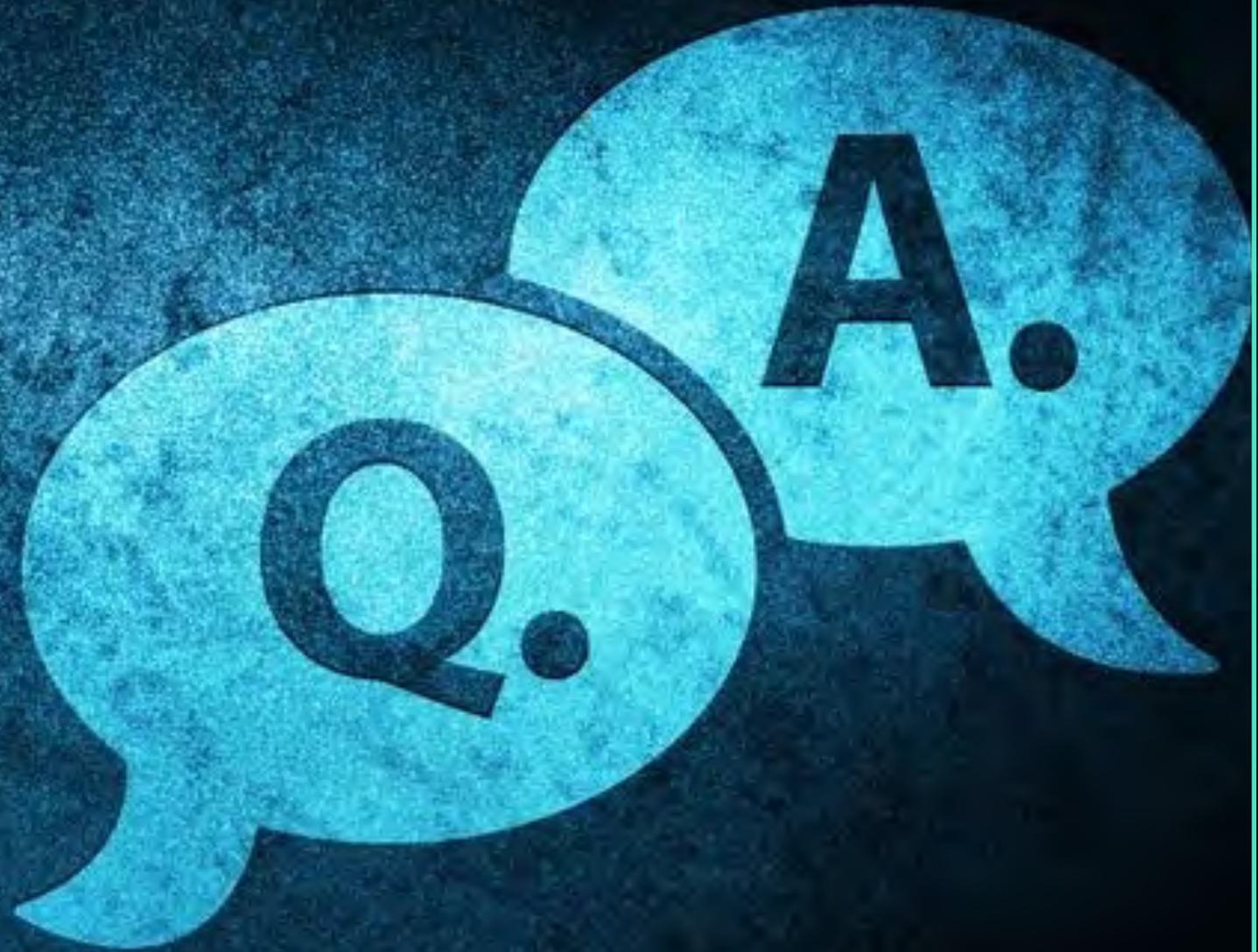


THANK YOU



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Q&A



Green economy and local green deals

Overall reflections and closing remarks

June 7th, 2021

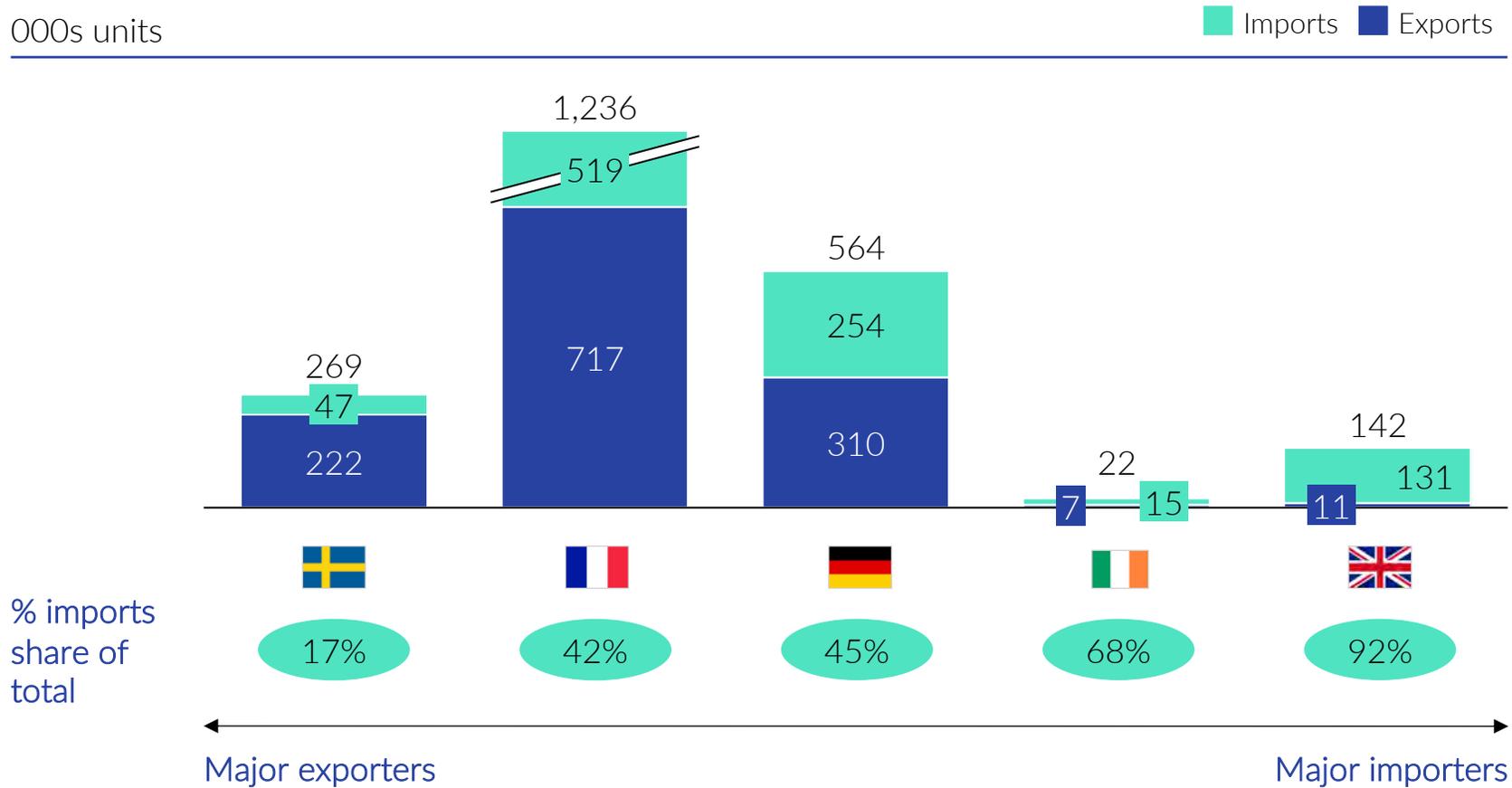


Backup

3. European manufacturing has some export opportunities, for example in heat pumps

Heat pump import and export volumes, by country in 2018¹

000s units



1. Estimate based on import value and heat pump ASP of 6000 USD

Source: Euroobserver & UNComtrade map

Heat pumps will be in high demand across Europe as the primary means of decarbonizing buildings

Today, European countries have very different levels of onshoring that do not necessarily reflect the size of manufacturing industries in their country. This suggest an open playing field

Heat pump manufacture does not have particularly high capital intensity, and so presents an option for manufacturing districts to enter