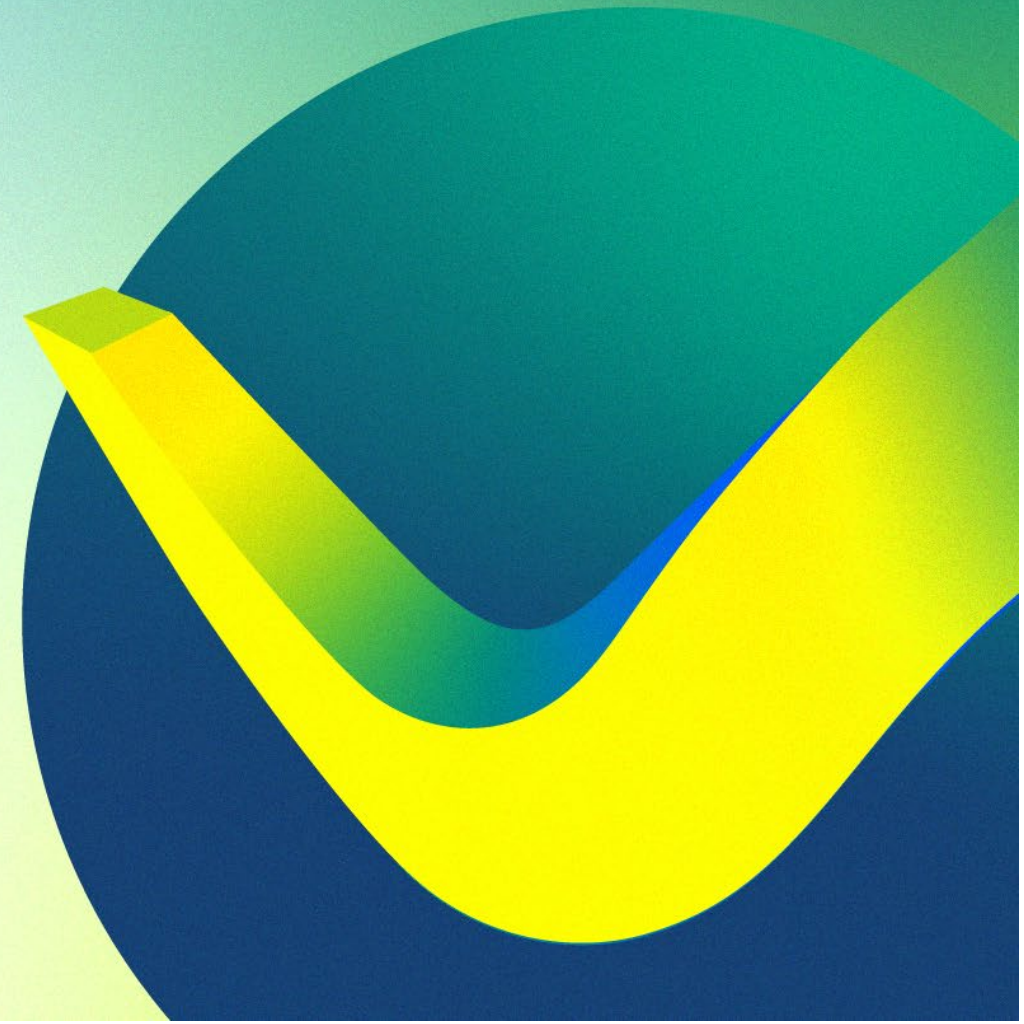
Sustainable Upgrading for better performance of infrastructure

dr inż. Adam Gola

Technical Development Manager, CEE



Challenges

SWEDISH STEEL PRIZE

Climate change

Growing world population

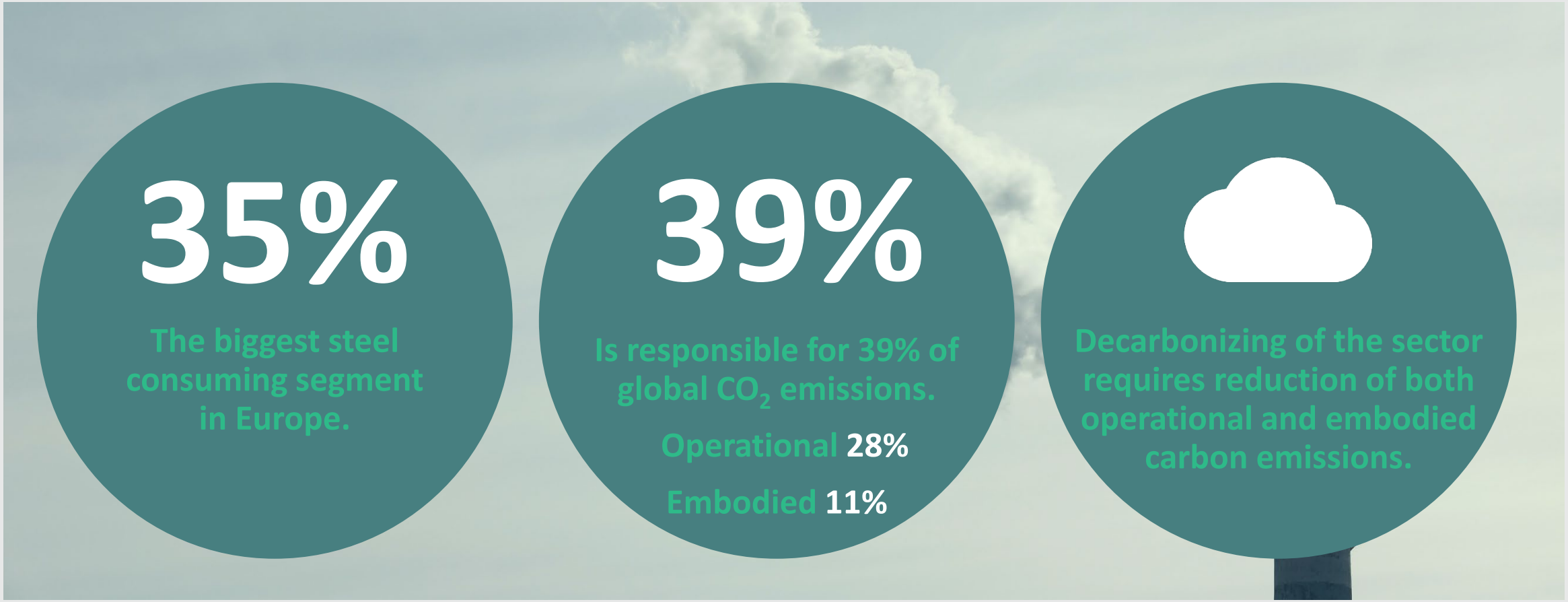
Urbanization

Resource scarcity

Demand for new infrastructure

Construction - huge CO2 reduction potential

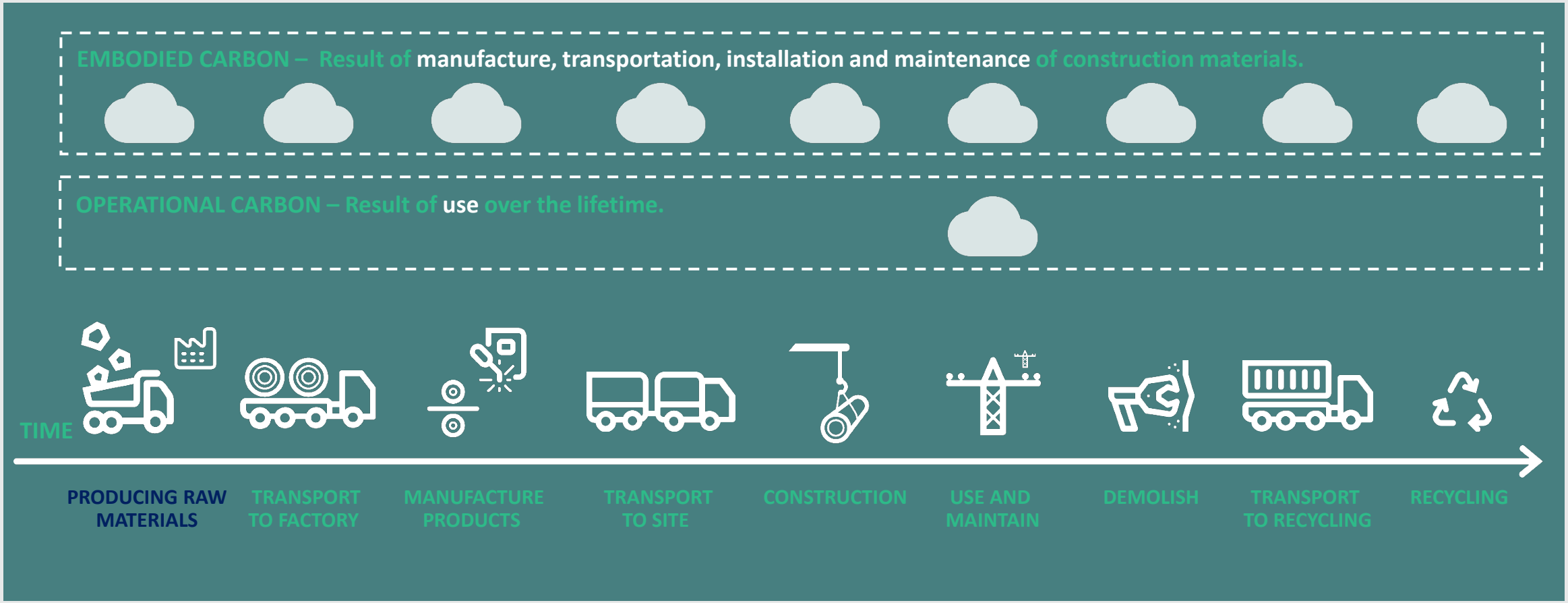
SWEDISH STEEL PRIZE



Sources: 2020 European Steel in Figures, EUROFER. Global Alliance of Buildings and Construction, 2018 GLOBAL STATUS REPORT.

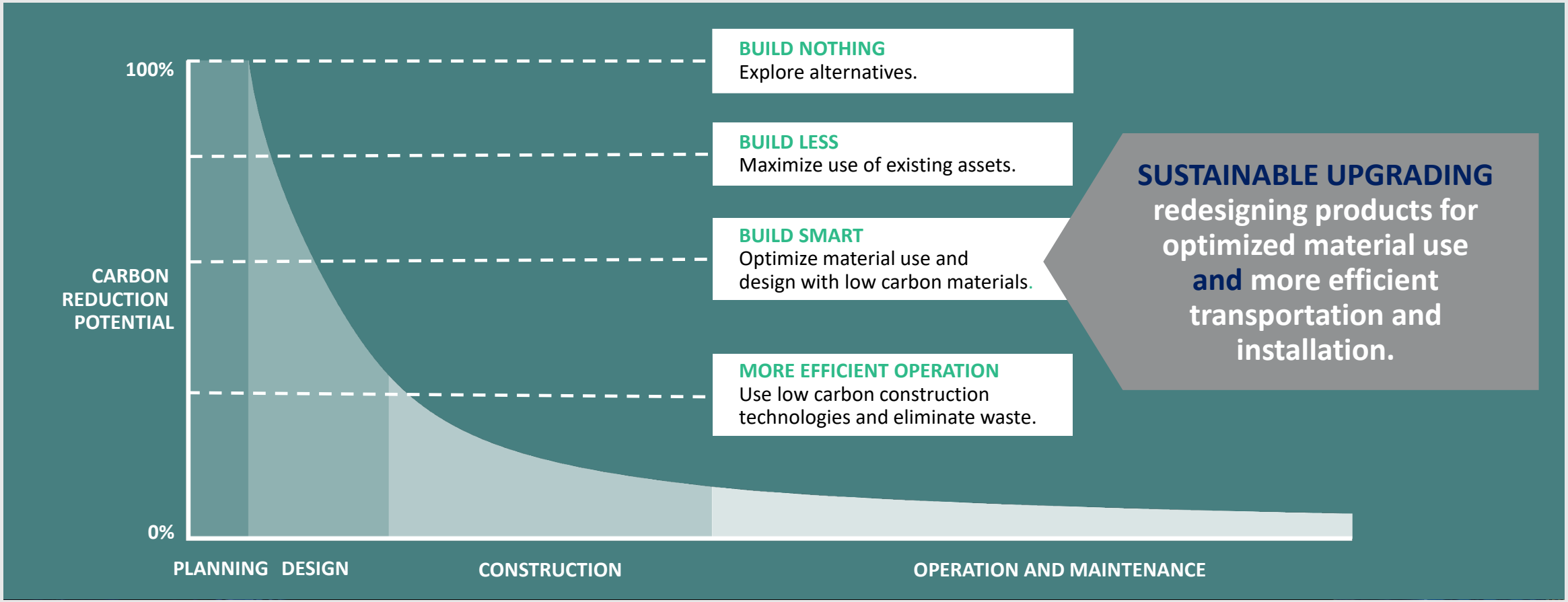
Embodied carbon in infrastructure projects

SWEDISH STEEL PRIZE



Reduce embodied carbon by building smarter

SWEDISH STEEL PRIZE



Sources: HM Treasure: Infrastructure Carbon Review via WGBC "Bringing Embedded Carbon Upfront" Report

SSAB Weathering enables sustainable substitution of coated steel structures

SWEDISH STEEL PRIZE

No hot dip galvanizing

No or less painting

Less steel with high-strength

USE STEEL BETTER

CO_2 efficient steel production

Fossil-free steel 2026

USE BETTER STEEL AND GO FOSSIL-FREE


More than
120 kg of CO_2
emissions
is released in
batch galvanizing
a ton steel
About
160 kg of CO_2
emissions
is released in
painting
a ton steel
SWEDISH
STEEL PRIZE
Coating processes are part of embodied carbon emissions
Source: Batch hot dip galvanized of steel products to EN ISO 1461 EUROPEAN AVERAGE, S-P-00915
Thickness 8mm, galvanized coating thickness 85 microns
SSAB

Ready without galvanizing or painting

SWEDISH STEEL PRIZE

NATURAL PATINATION

Patina develops naturally under wet-dry cycles in atmospheric conditions.

This slows down corrosion and provides a service life comparable to coated carbon steel when applied properly.

LOWER COSTS

Lower costs already during construction phase.

LOWER LIFE-CYCLE COSTS

No need for painting, meaning it's an almost maintenance-free solution.

When painted – great paint adhesion doubles the repainting intervals.

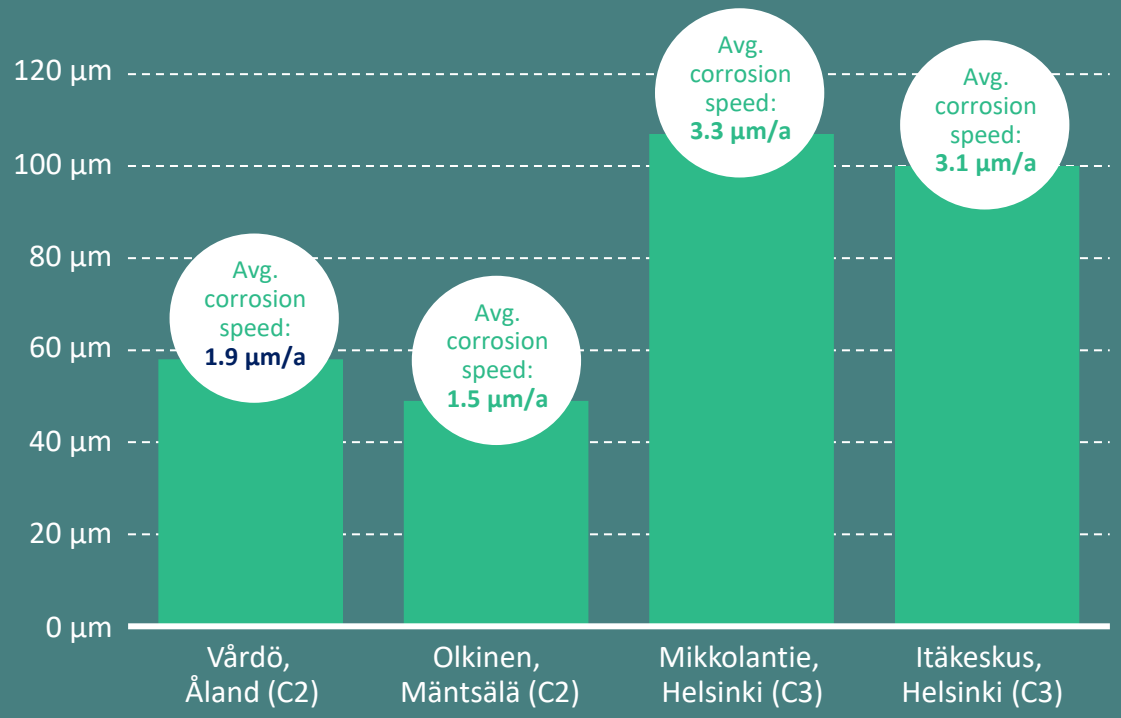
AESTHETICAL

Color blends into the landscape.

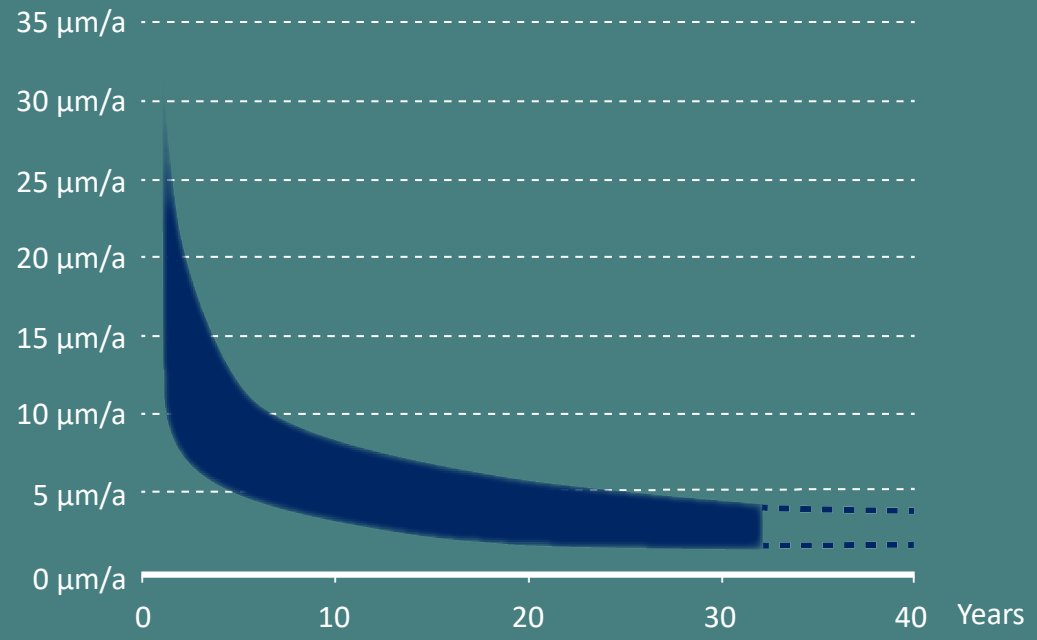
Test results from real conditions in Finland

SWEDISH STEEL PRIZE

Bridges in Finland: Cumulative corrosion loss of 32 years (1982–2014), material COR-TEN B



Development of corrosion loss (µm/a) over the lifetime



Source: VTT-CR-05247-14, Säänkestävien teräslevyjen korroosiotutkimus v. 2014, Leena Carpen, VTT Technical Research Center of Finland.

Sustainable upgrading

SWEDISH STEEL PRIZE

No hot dip galvanizing

No or less painting

Less steel with high-strength

USE STEEL BETTER

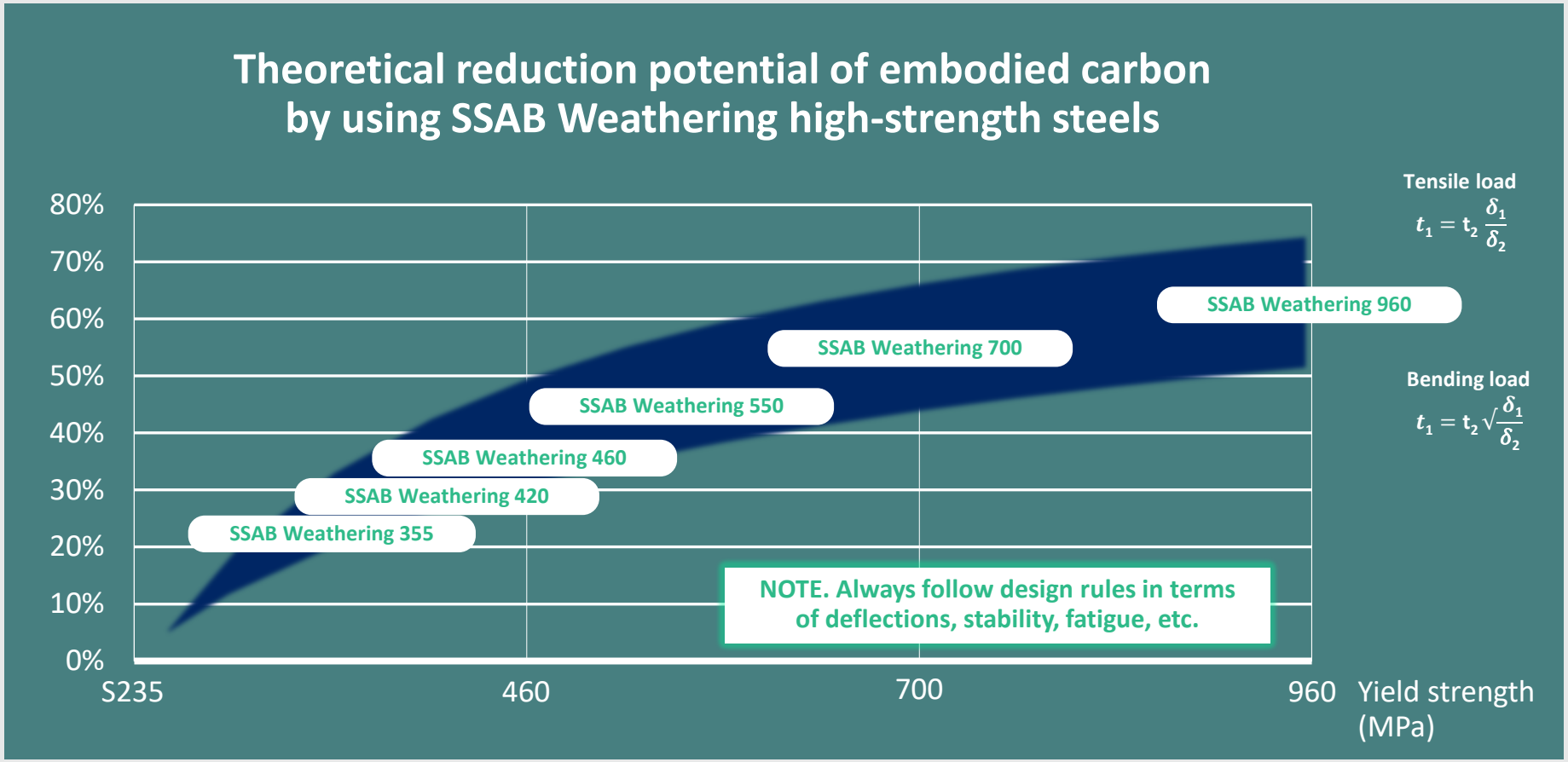
CO_2 efficient steel production

Fossil-free steel 2026

USE BETTER STEEL AND GO FOSSIL-FREE

Stronger and more sustainable

SWEDISH STEEL PRIZE



High-strength steels enable thinner and lighter designs, reducing the amount of related manufacturing and transportation CO_2 emissions

Example of sustainable upgrading

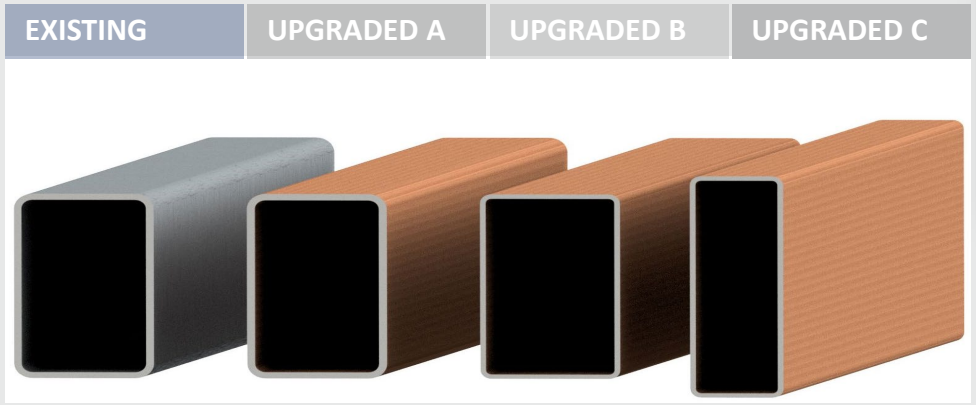
SWEDISH STEEL PRIZE

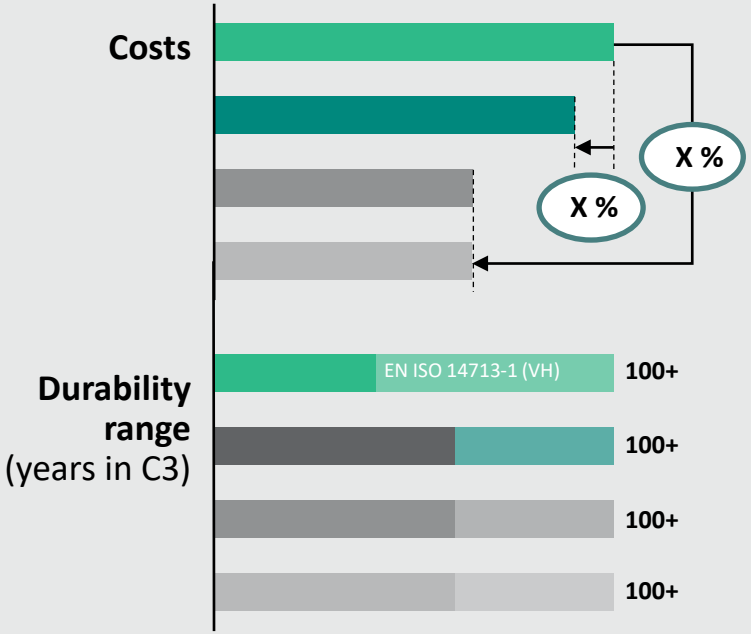
EXISTING	UPGRADED A	UPGRADED B	UPGRADED C
Grade: S355J2H	**Grade:** SSAB Weathering Tube 355WH	**Grade:** SSAB Weathering Tube 500WH	**Grade:** SSAB Weathering Tube 500WH
Dimension: 250 x 150 x 8	**Dimension:** 250 x 150 x 8.5	**Dimension:** 250 x 150 x 6.0	**Dimension:** 300 x 100 x 6.0
Surface treatment: hot dip galvanized (EN 1461)	**Surface:** Patinated	**Surface:** Patinated	**Surface:** Patinated

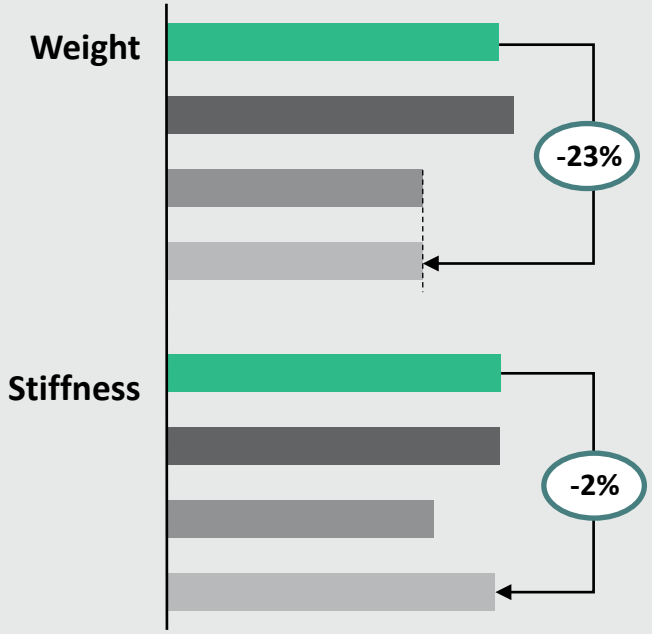
Example of sustainable upgrading

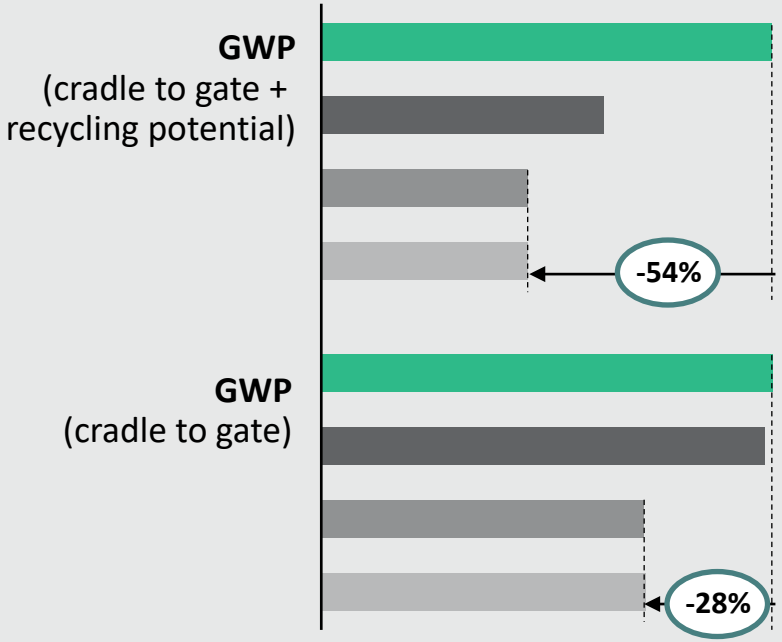
SWEDISH STEEL PRIZE

Grade: SSAB Weathering Tube 500WH
Dimension: 300 x 100 x 6.0
Surface: Patinated









Sustainable upgrading

SWEDISH STEEL PRIZE

No hot dip galvanizing

No or less painting

Less steel with high-strength

USE STEEL BETTER

CO_2 efficient steel production

Fossil-free steel 2026

USE BETTER STEEL AND GO FOSSIL-FREE

LCA phases and contribution of SSAB Weathering

SWEDISH STEEL PRIZE

EN 15804 Sustainability of construction works

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbisment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery, recycling.-potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CO_2 efficient steel	■																■
Fossil-free steel 2026	■																■
High-strength	■	■	■	■	■								■	■			■
No hot dip galvanizing		■	■														■
No or less painting			■				■										■

■ Contribution of SSAB Weathering

SWEDISH
STEEL PRIZE

USE STEEL BETTER
USE BETTER STEEL