



GROUPA

CARBONLAB

NATIONALE BIOBASED CONFERENTIE



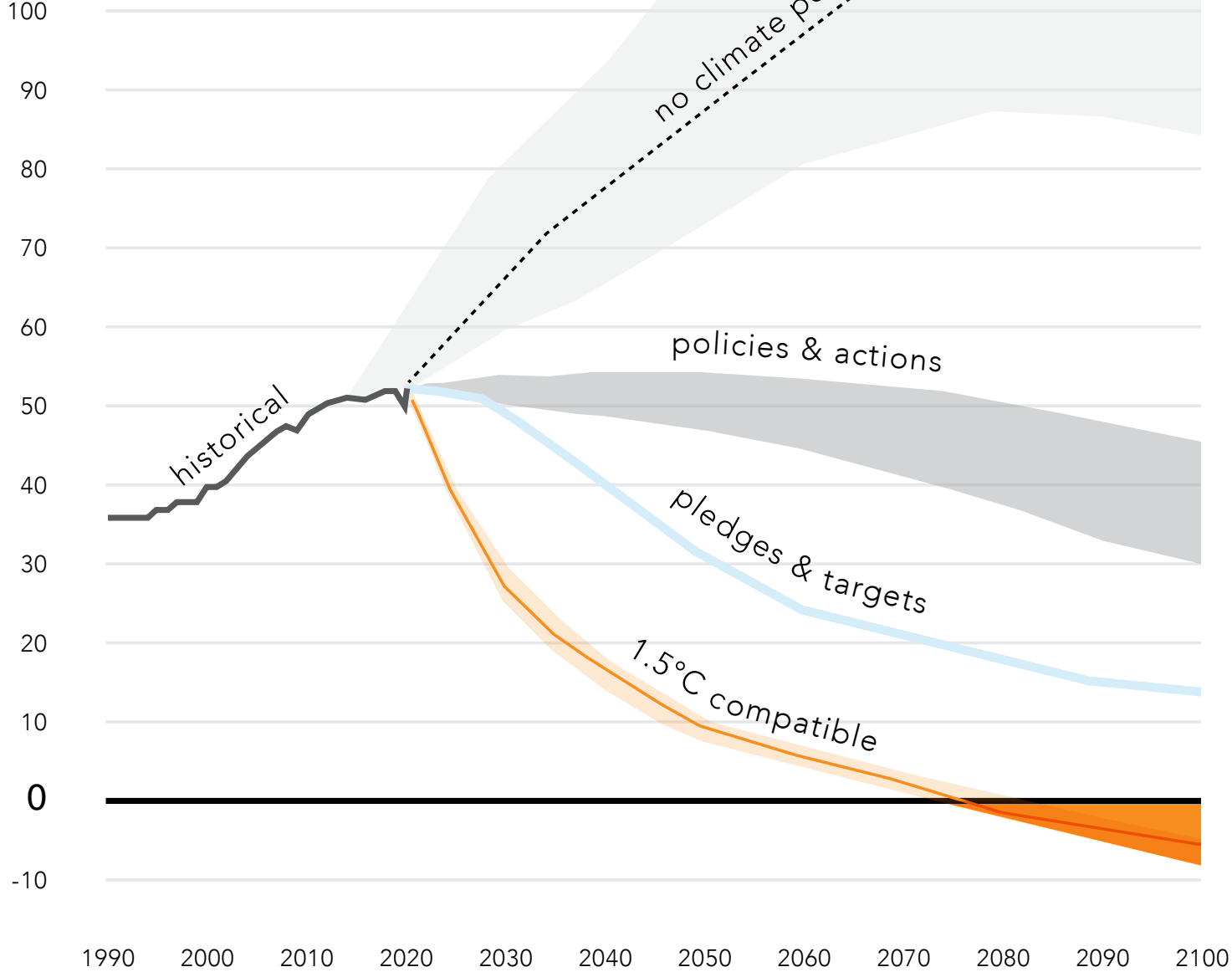
THE CARBON CLOCK IS TICKING

OPWARMINGSPROJECTIES 2100

globale context

global
emissions

Global GHG emissions in GtCO₂/year



~+4.5C

predicted
warming
by 2100

+2.9°C

+2.6°C

+2.0°C

+1.5°C

AANDEEL GEBOUWDE OMGEVING

'HOUSING THE NEXT 2 BLN PEOPLE:

*'UNTIL 2050, WE CONSTRUCT THE BUILT VOLUME EQUIVALENT OF ONE NEW YORK CITY,
ALL 5 BOROUGHS, EVERY MONTH..'*

UN SECRETARY GENERAAL ANTÓNIO GUTERRES 2019

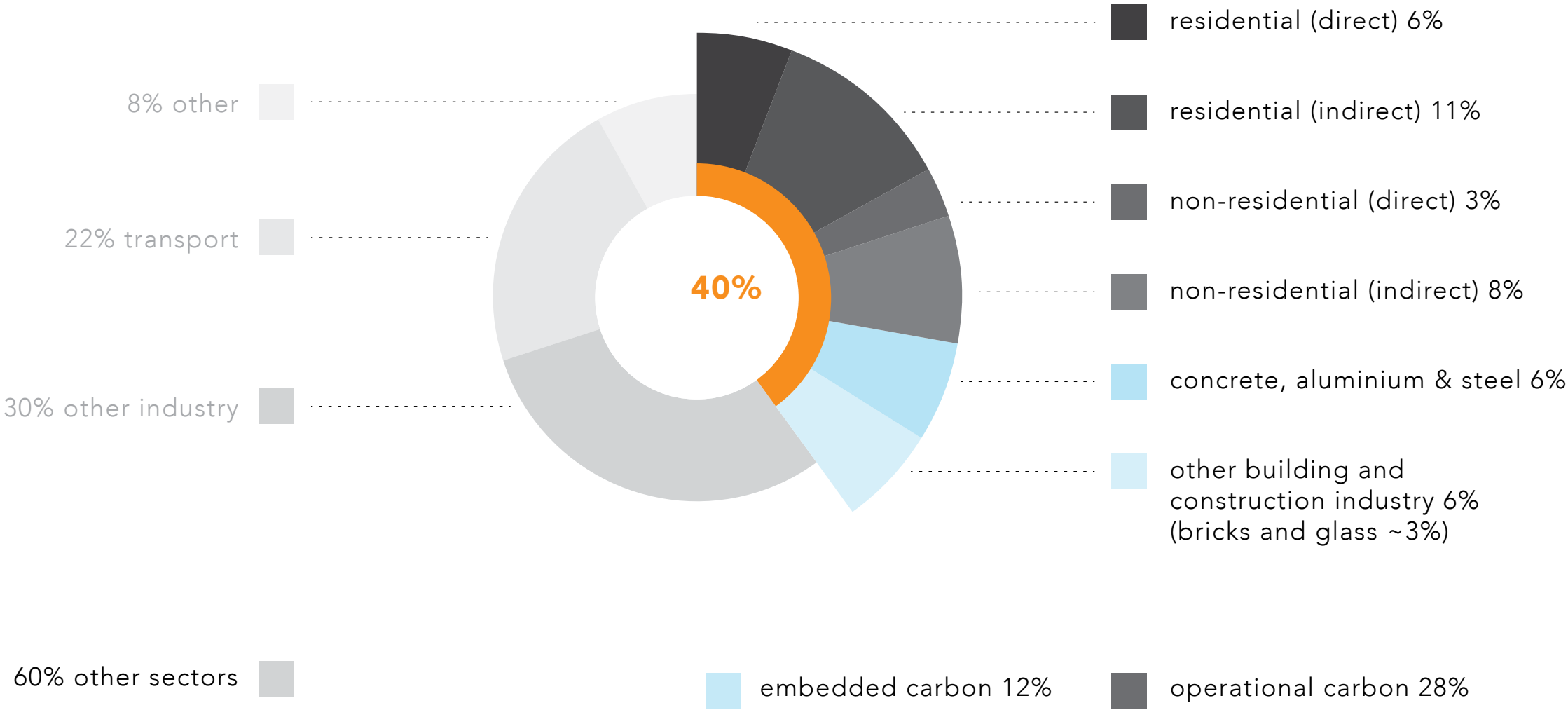


2023



AANDEEL GEBOUWDE OMGEVING IN EMISSIES*

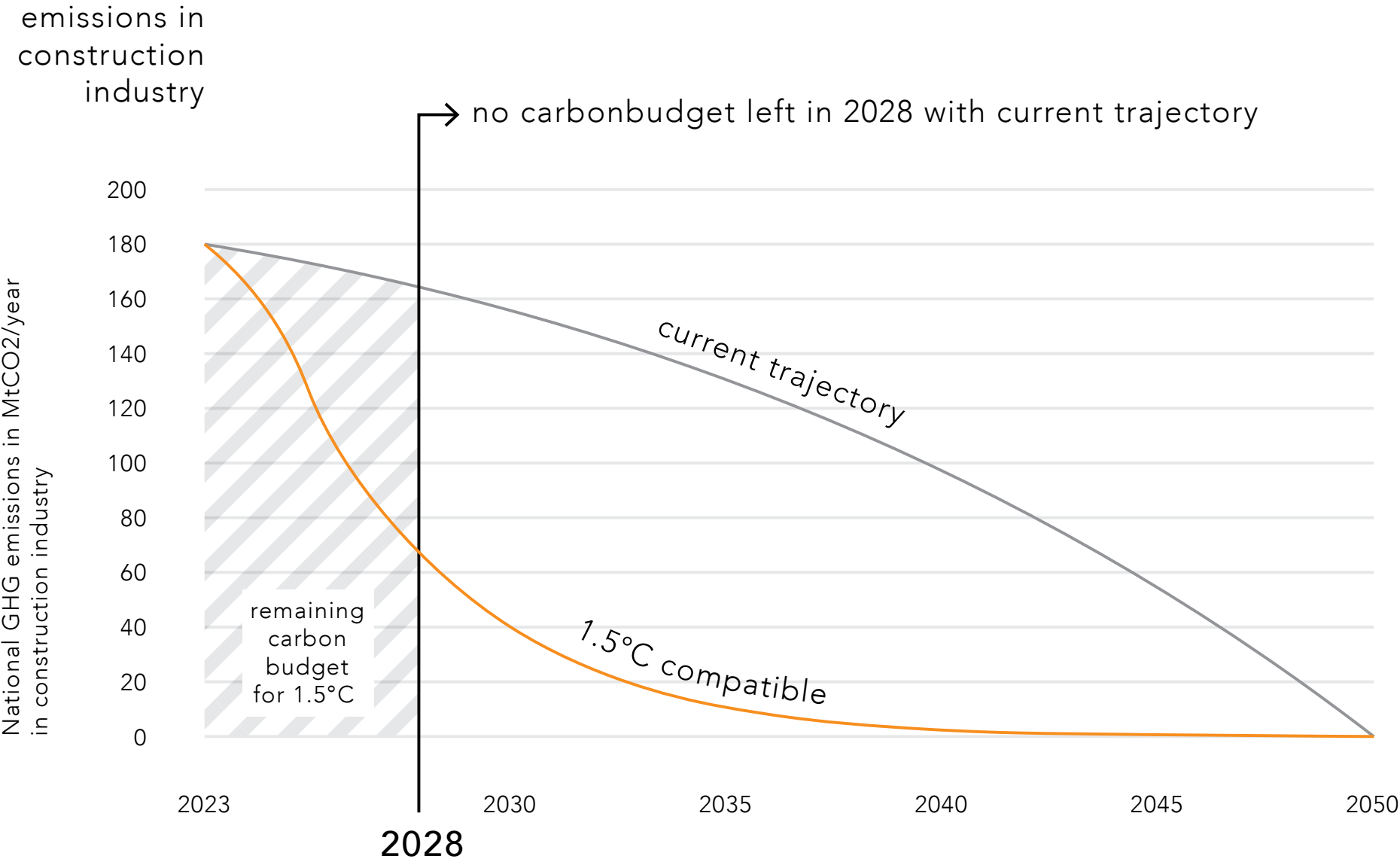
*in global energy and process emissions 2021 (IEA 2022F)



» from the 2022 UN environment programme - global status report for buildings and construction
 » adapted from the IEA 2022f

HET RESTERENDE CO₂ BUDGET (NL)

van de bouwsector in Nederland



PARIS PROOF CARBON BUDGET: GWP_A

Paris Proof grenswaarden voor materiaalgebonden emissies (in kg CO2-eq / m2) indicatie tussenliggende jaren

Paris Proof Nieuwbouw	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Woning (eengezinswoning)	200	192	184	175	167	159	151	142	134	126	121	116	111	106	101	95	90	85	80	75	72	69	66	63	60	57	54	51	48	45
Woning (meergezinswoning)	220	211	202	193	184	175	166	157	148	139	133	128	122	117	111	105	100	94	89	83	80	76	73	70	67	63	60	57	53	50
Kantoor	250	240	230	219	209	199	189	178	168	158	152	145	139	132	126	120	113	107	100	94	90	86	83	79	75	71	67	64	60	56
Retail vastgoed	260	249	239	228	217	207	196	185	175	164	157	151	144	138	131	124	118	111	105	98	94	90	86	82	79	75	71	67	63	59
Industrie	240	230	220	210	200	191	181	171	161	151	145	139	133	127	121	115	109	103	97	91	87	84	80	76	73	69	65	61	58	54

Paris Proof Renovatie	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Woning (eengezinswoning)	100	96	92	88	84	79	75	71	67	63	61	58	56	53	51	48	46	43	41	38	37	35	34	32	31	29	28	26	25	23
Woning (meergezinswoning)	100	96	92	88	84	79	75	71	67	63	61	58	56	53	51	48	46	43	41	38	37	35	34	32	31	29	28	26	25	23
Kantoor	125	120	115	110	105	99	94	89	84	79	76	73	69	66	63	60	57	53	50	47	45	43	41	39	38	36	34	32	30	28
Retail vastgoed	125	120	115	110	105	99	94	89	84	79	76	73	69	66	63	60	57	53	50	47	45	43	41	39	38	36	34	32	30	28
Industrie	100	96	92	88	84	79	75	71	67	63	61	58	56	53	51	48	46	43	41	38	37	35	34	32	31	29	28	26	25	23



bron: Dutch Green Building Council

> ANTICIPEREN

Londen 2023: s;loop- nieuwbouw Oxford verboden door minister



> ANTICIPEREN

Gebouwen hoger dan 12 lagen / 37 meter verboden





NIEUWE ROL!



onderzoek: regelgeving, materialen, partners, kosten



CO2 berekeningen: methode en eenheid



research by design: toepassing van kennis in lopende projecten

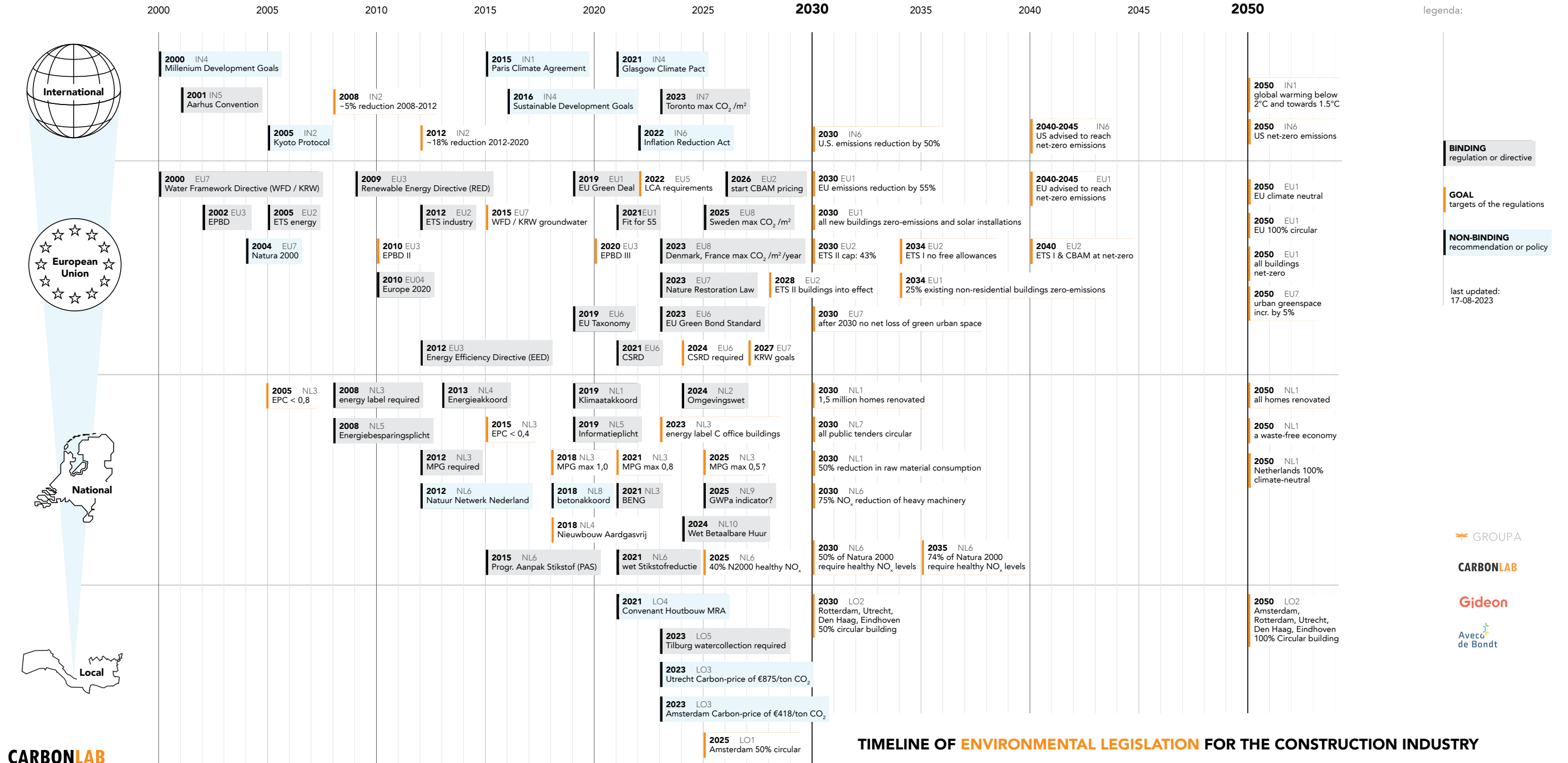


delen: dit is een inspanning van ons allemaal!

**NAAR EEN
KLIMAATPOSITIEVE
GEBOUWDE OMGEVING!**

REGELGEVING

dit heeft iedereen in de sector met elkaar gemeen:



REGELGEVING: MPG ONTOEREIKEND



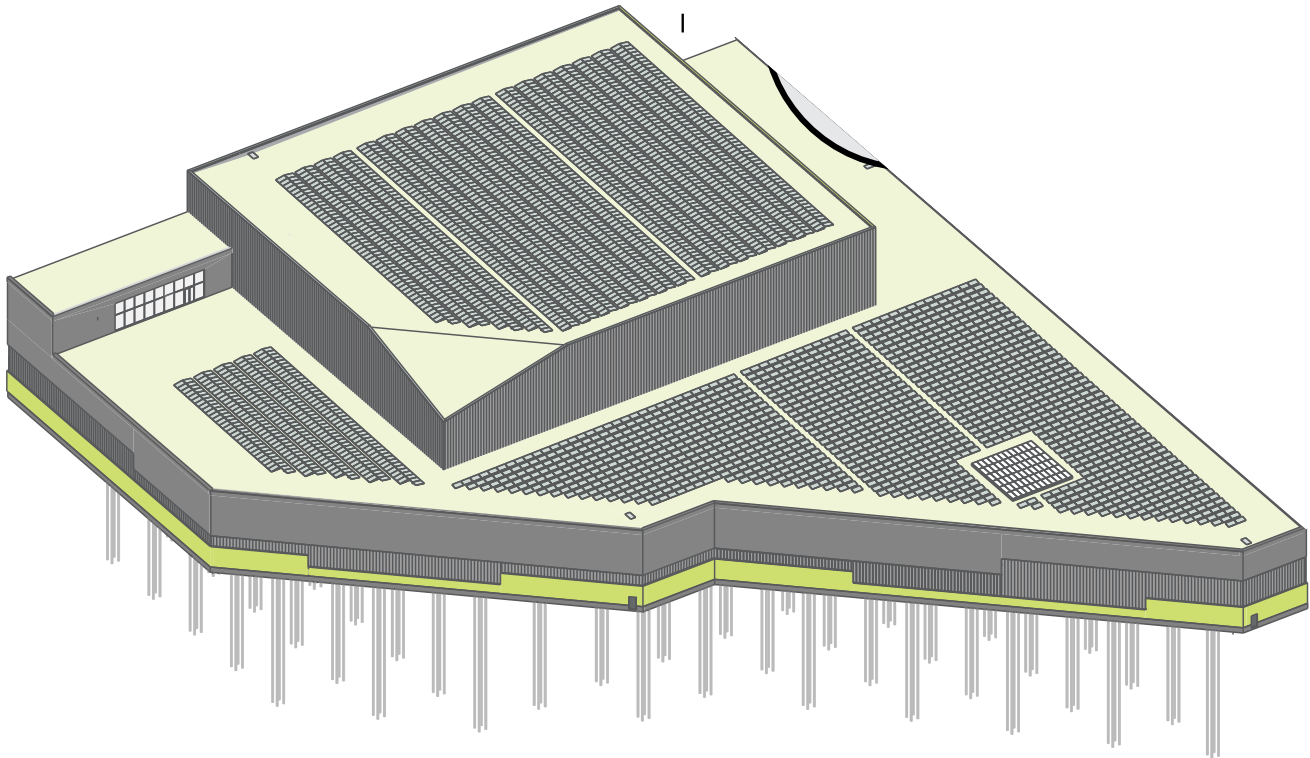
MPG



GWP_a indicator

2023: 0.35 EUR / m²

2023: 366 kg CO₂ / m² BVO

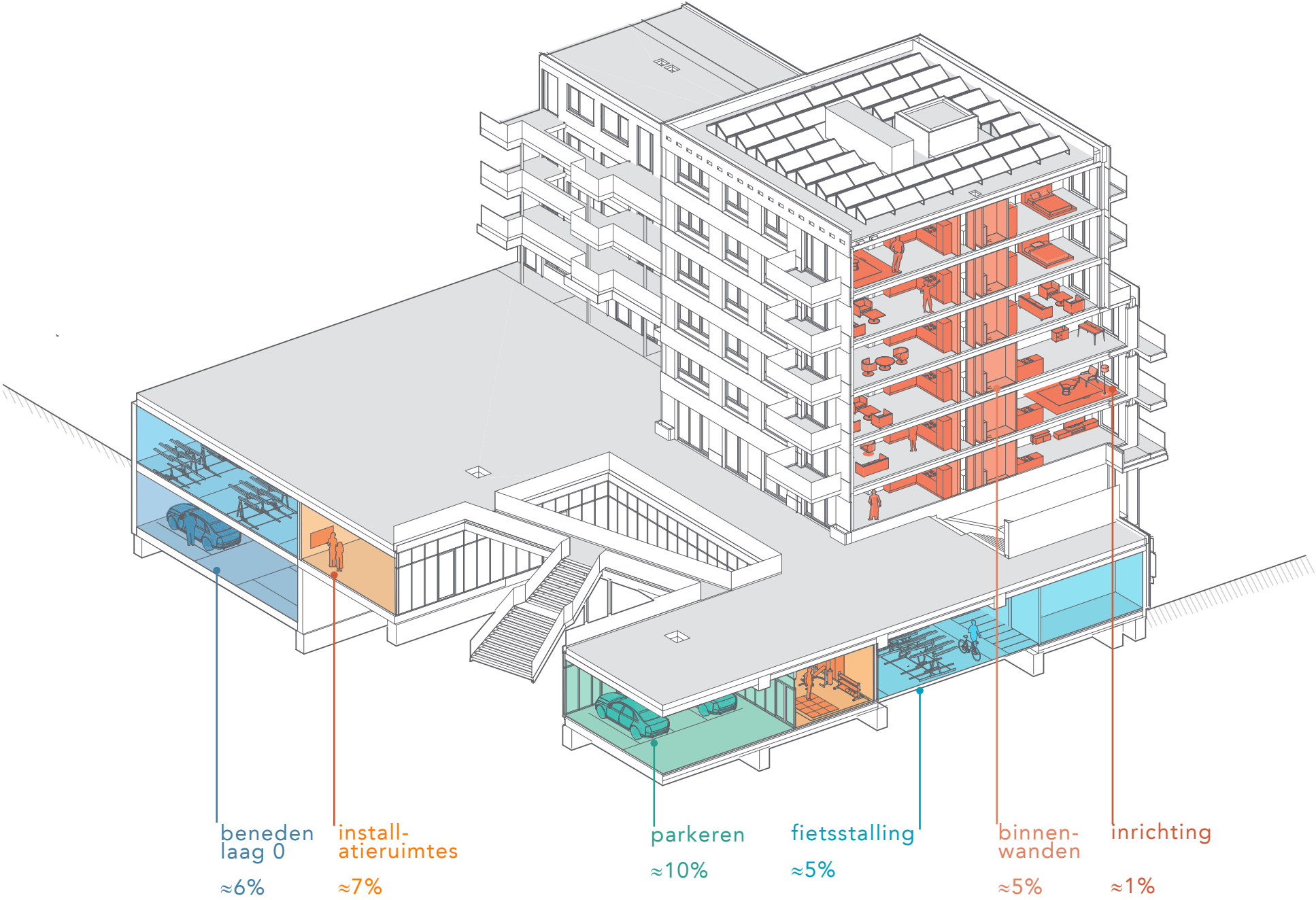
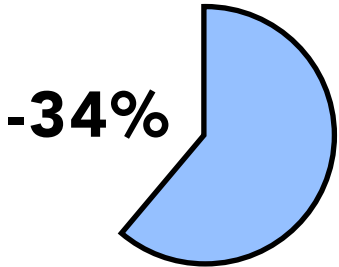


BIOGENE CO2 (NIET) REKENEN

VOLGENS NEDERLANDSE REKENMETHODE IS DIT HOUTEN GEBOUW (MEI ARCHITECTEN) NIET DUURZAMER DAN EEN GEBOUW IN STAAL OF BETON



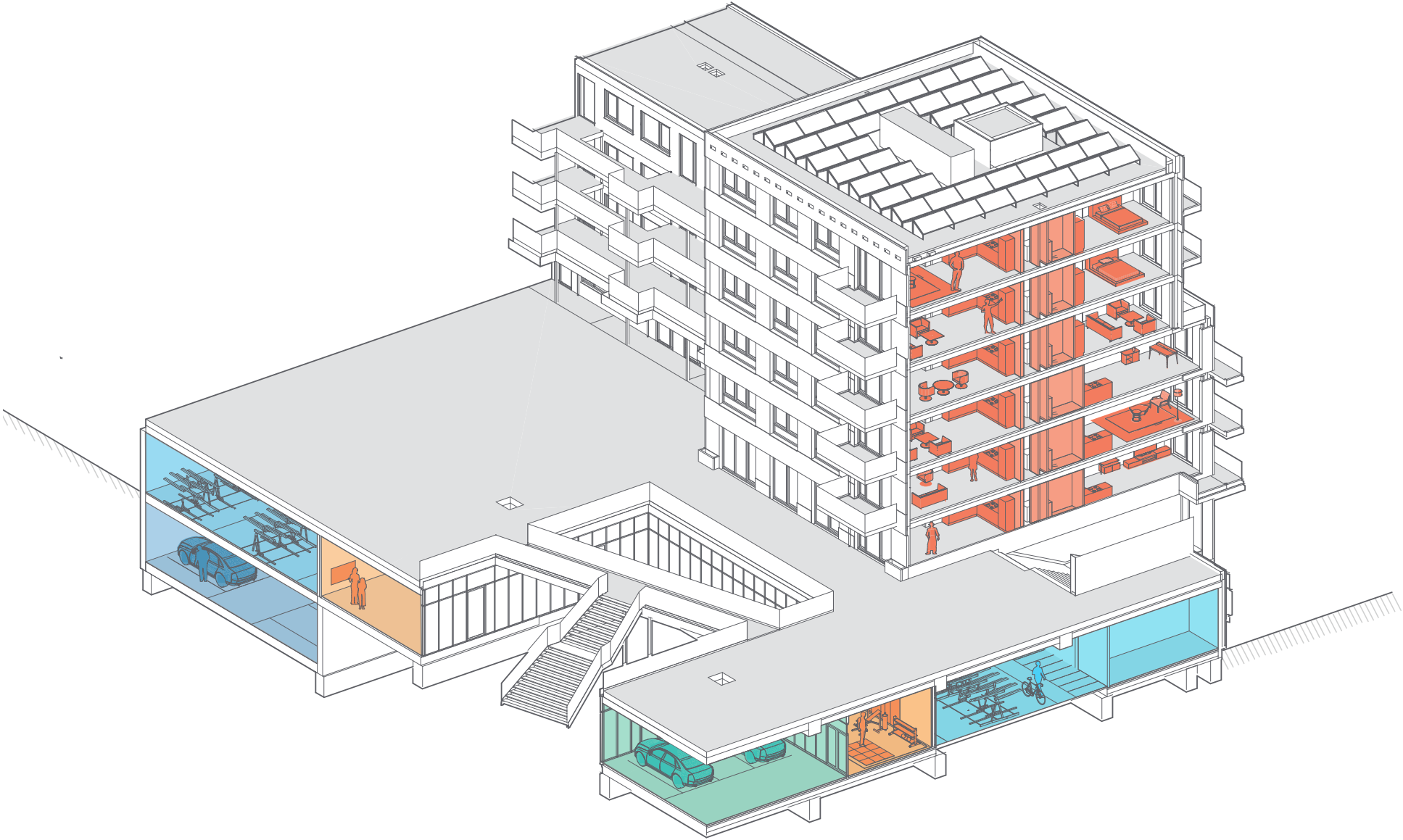
REGELGEVING



GROUP A FEITELIJKE UITSTOOT & OPSLAG

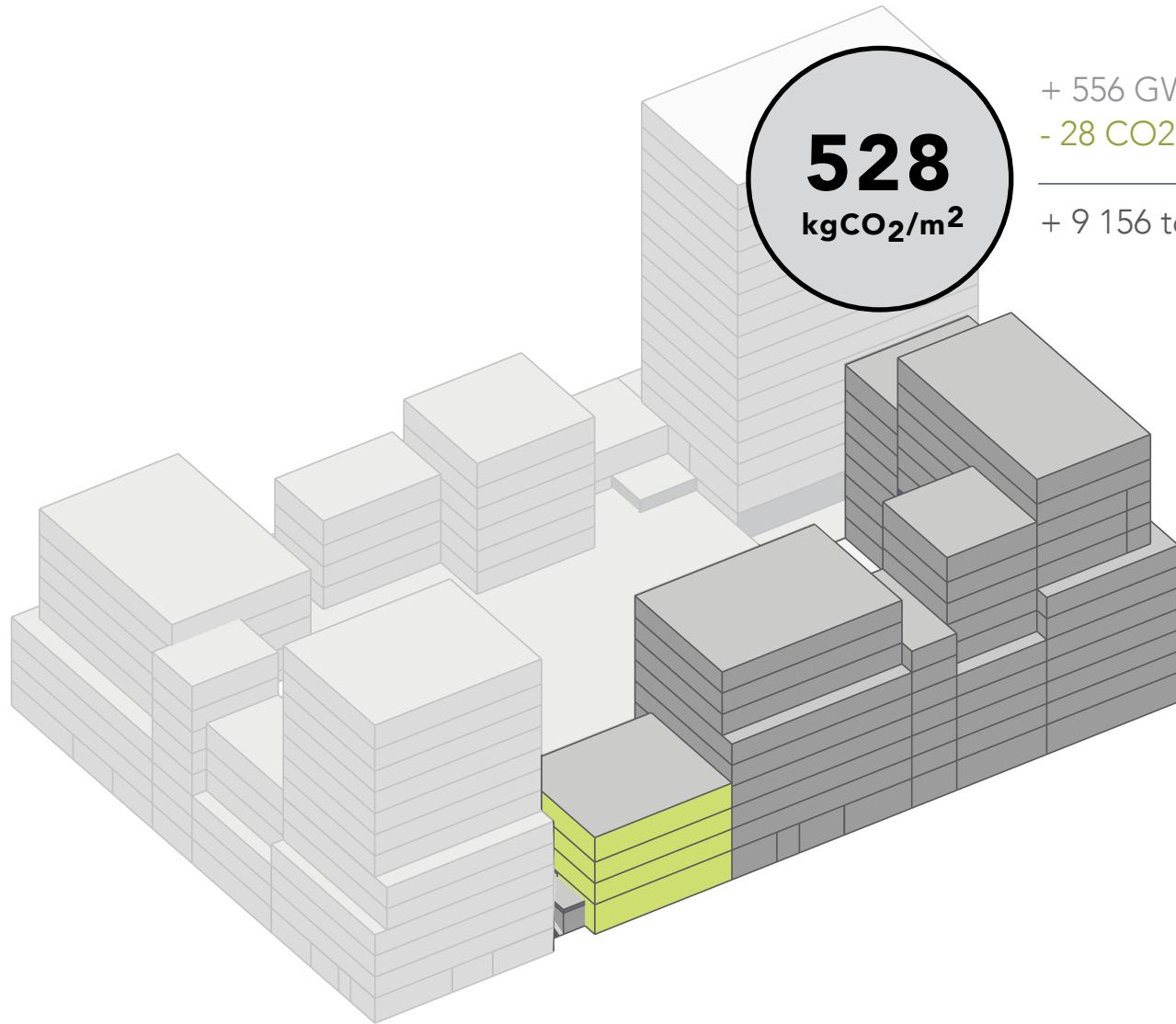
100%

100%

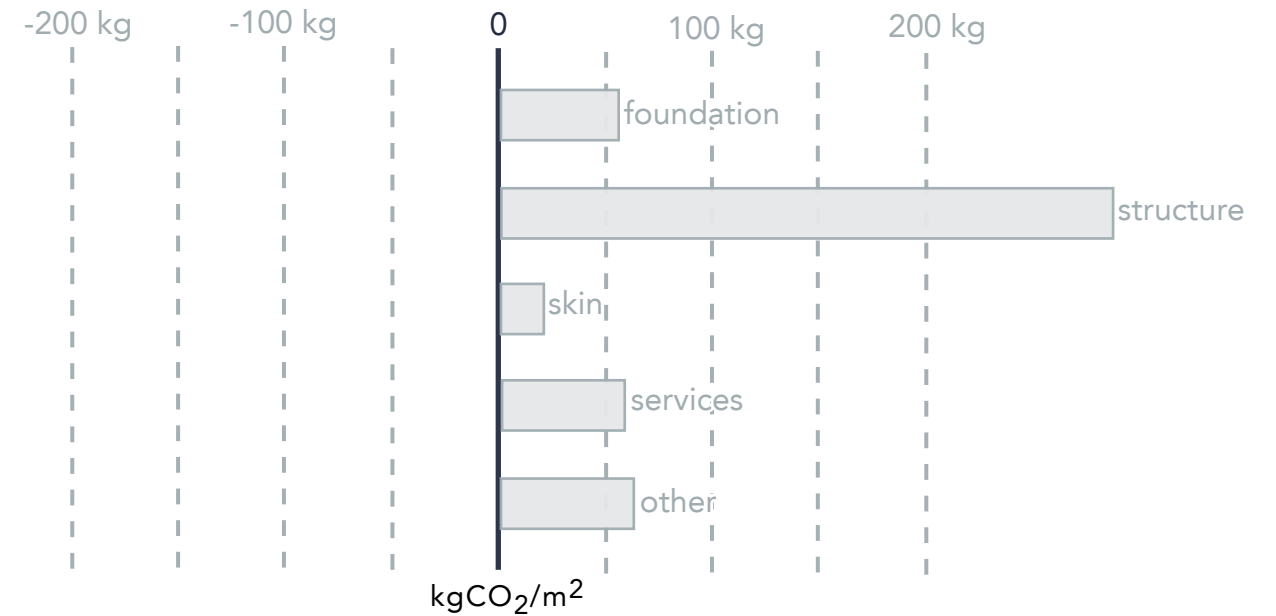


MERWEDE B11

lopend project in VO fase



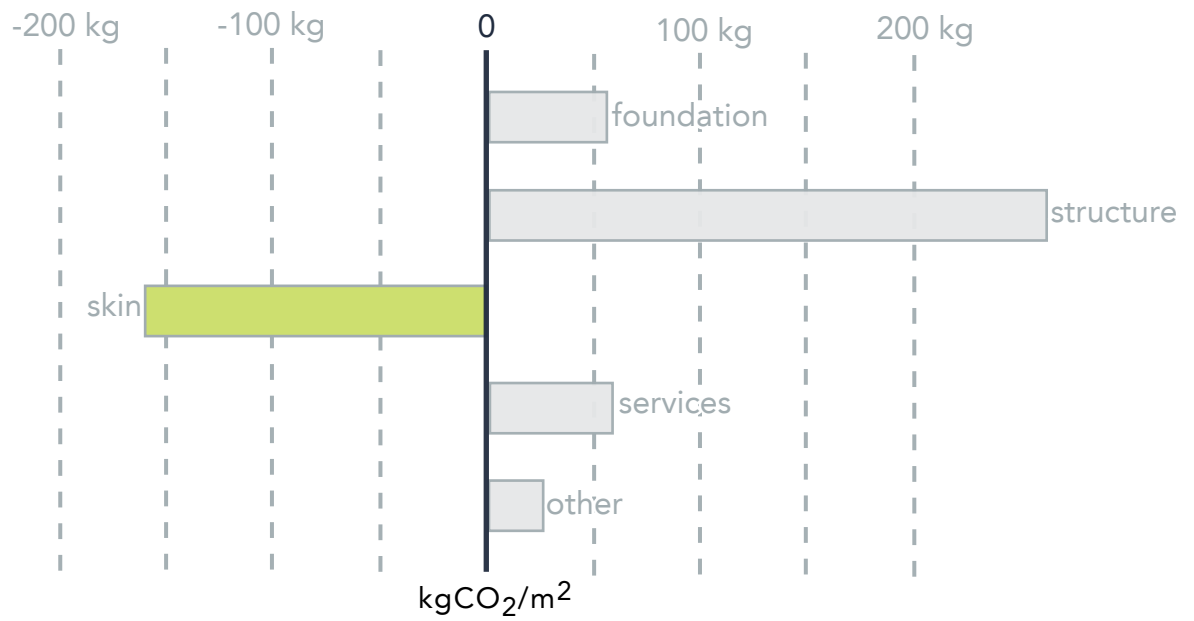
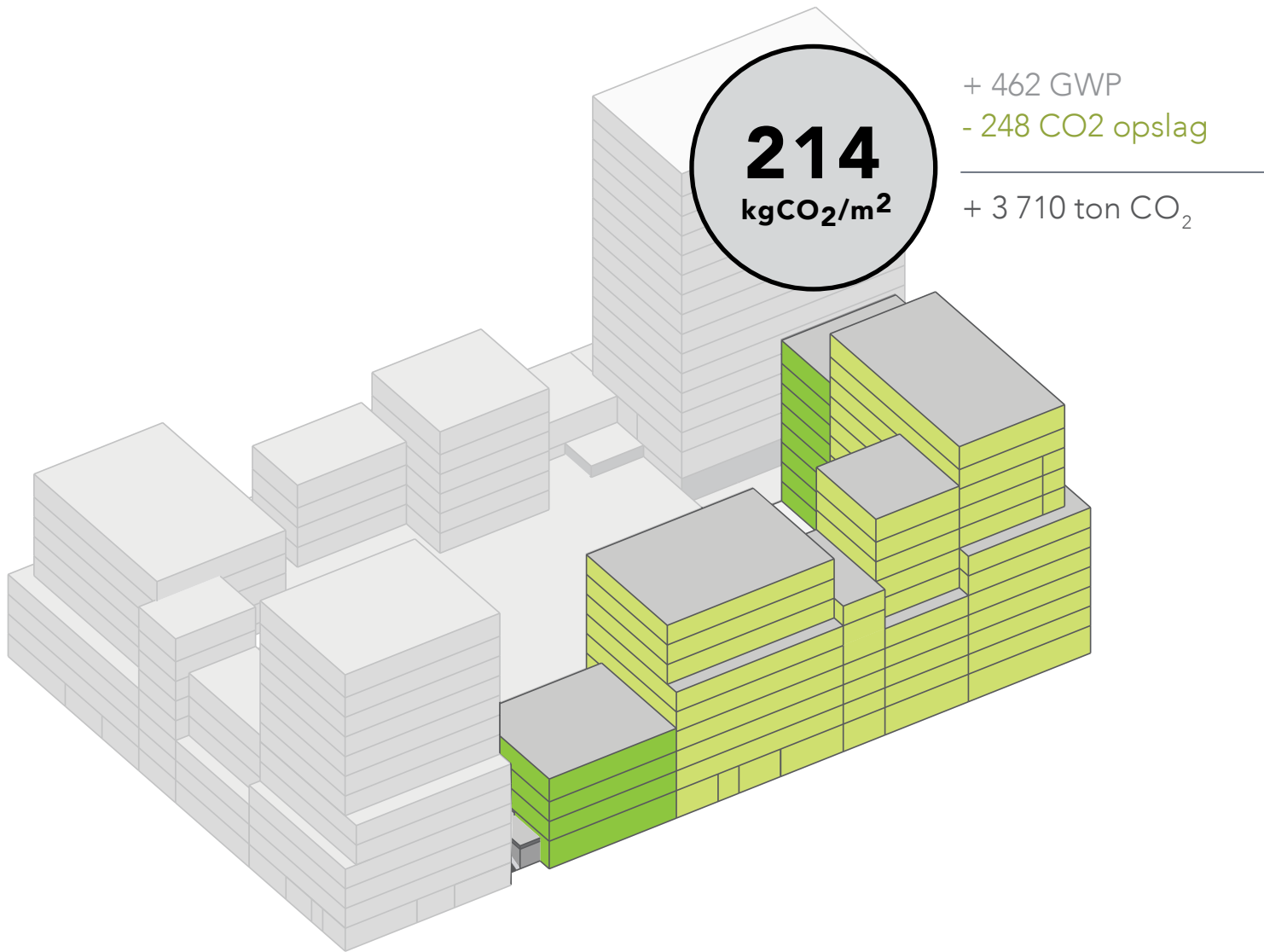
+ 556 GWP
- 28 CO₂ opslag
+ 9 156 ton CO₂



concrete plate concrete frame wood cladding
external wall wood stud steel stud internal walls
aluminium and clay brick facade

MERWEDE B11

cellulose isolatie en xcarb wapening



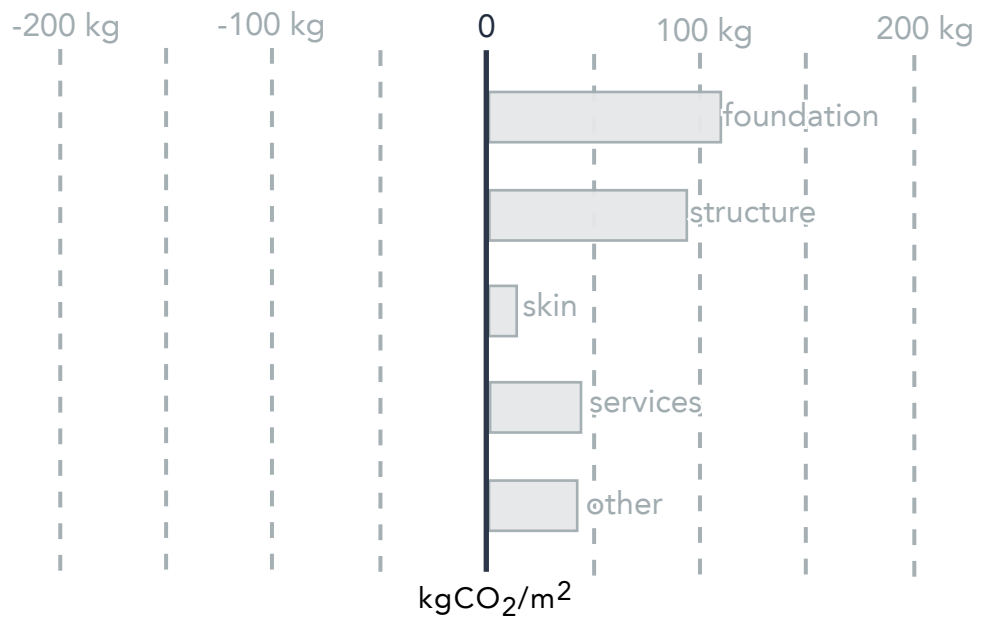
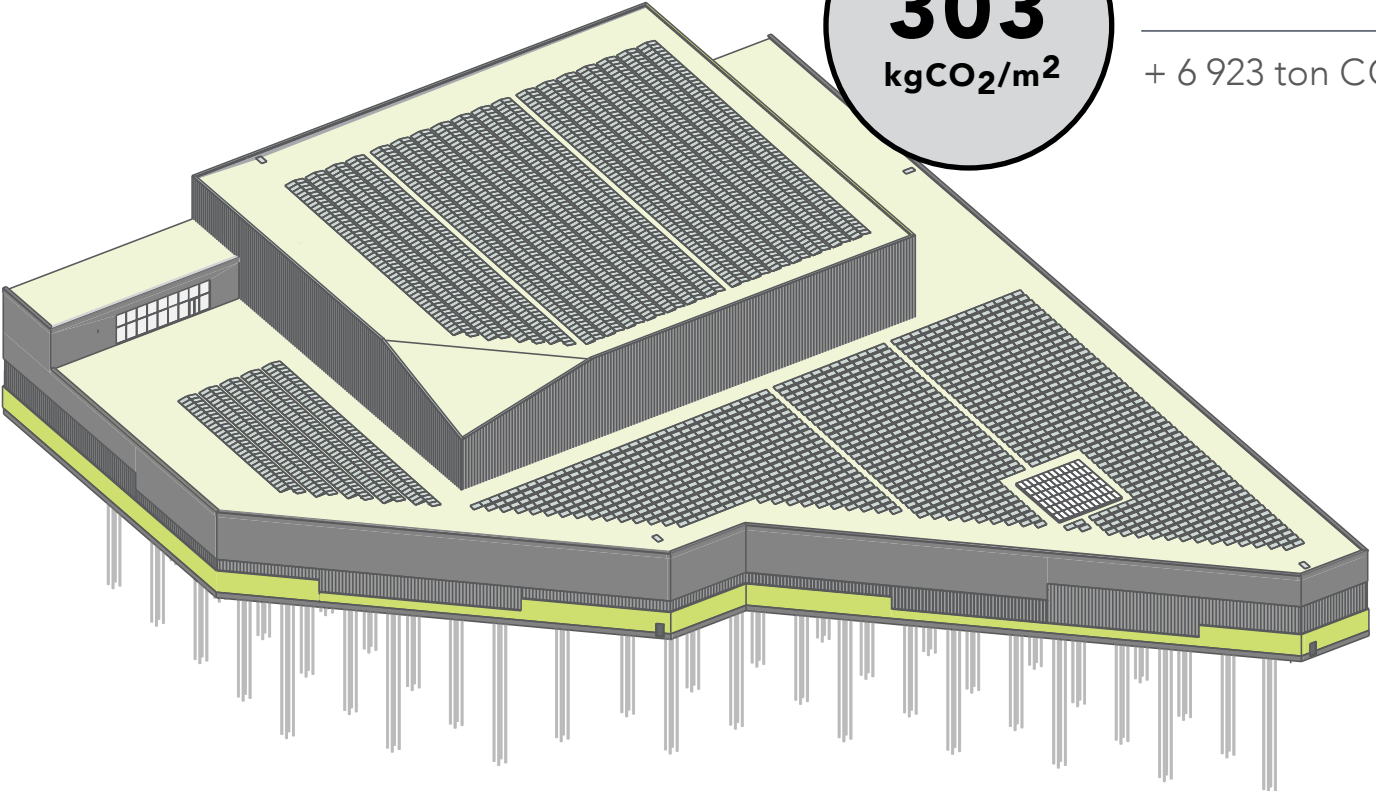
- concrete plate
- concrete frame
- wood cladding
- external wall wood stud
- cellulose
- xcarb steel
- earth brick

LOGISTIEK HYBRIDE

Paris Proof
200
kgCO₂/m²

303
kgCO₂/m²

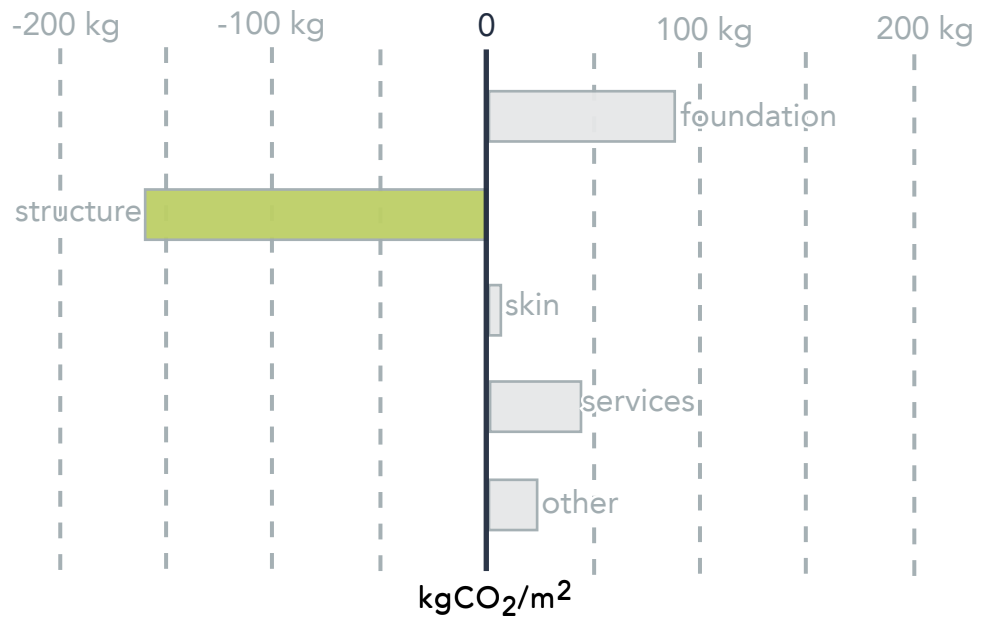
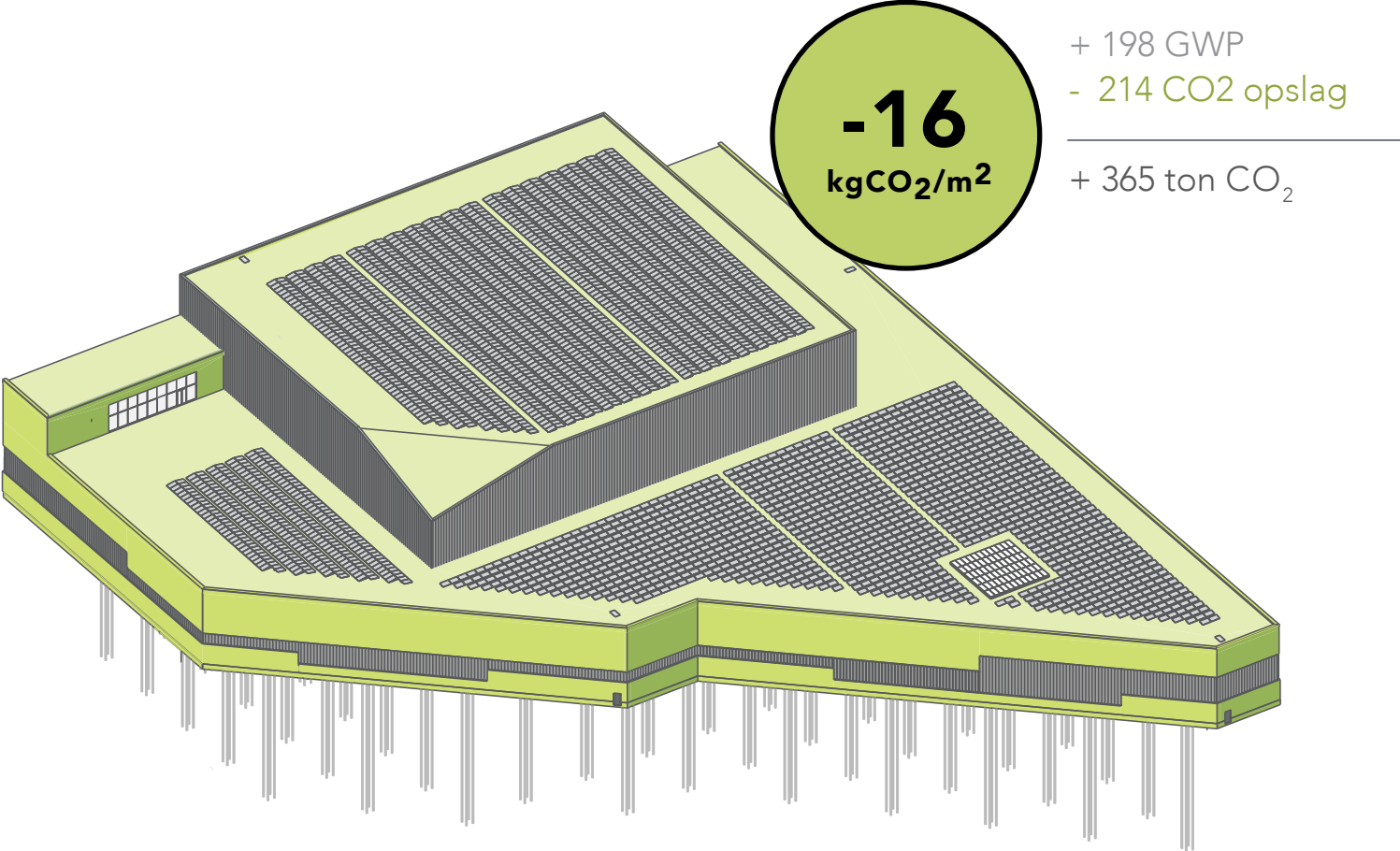
+ 366 GWP
- 63 CO₂ opslag
+ 6 923 ton CO₂



- aluminium 0% recycled
- concrete 0% recycled
- hempcrete
- steel frame
- LVL slab
- rodeca
- rockwool
- krycarb steel

LOGISTIEK MAXIMUM BIOBASED

Paris Proof
200
kgCO₂/m²



- aluminium 80% recycled
- concrete 20% recycled
- hempcrete
- CLT columns
- LVL slabs
- rodeca
- cellulose
- xcarb steel

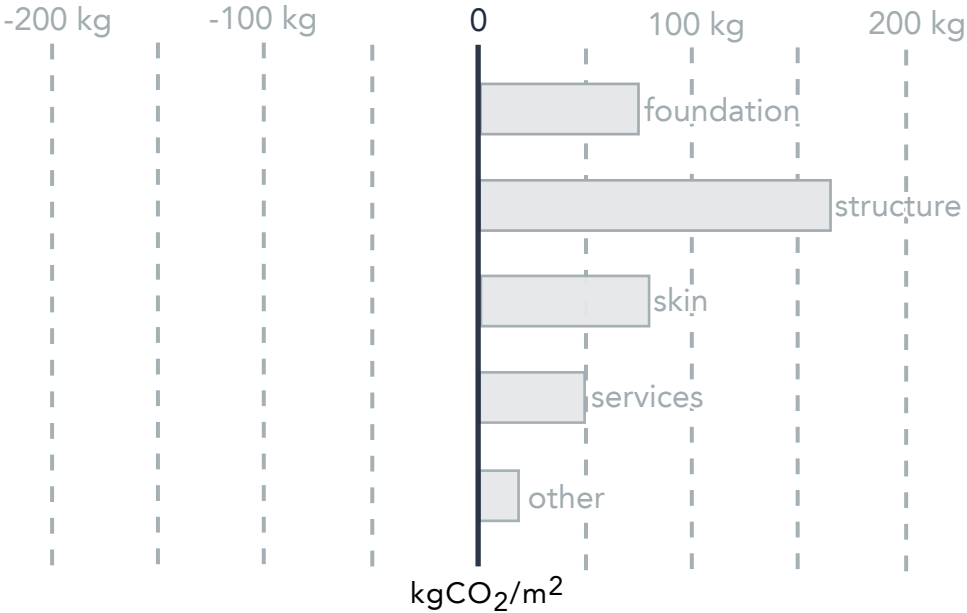
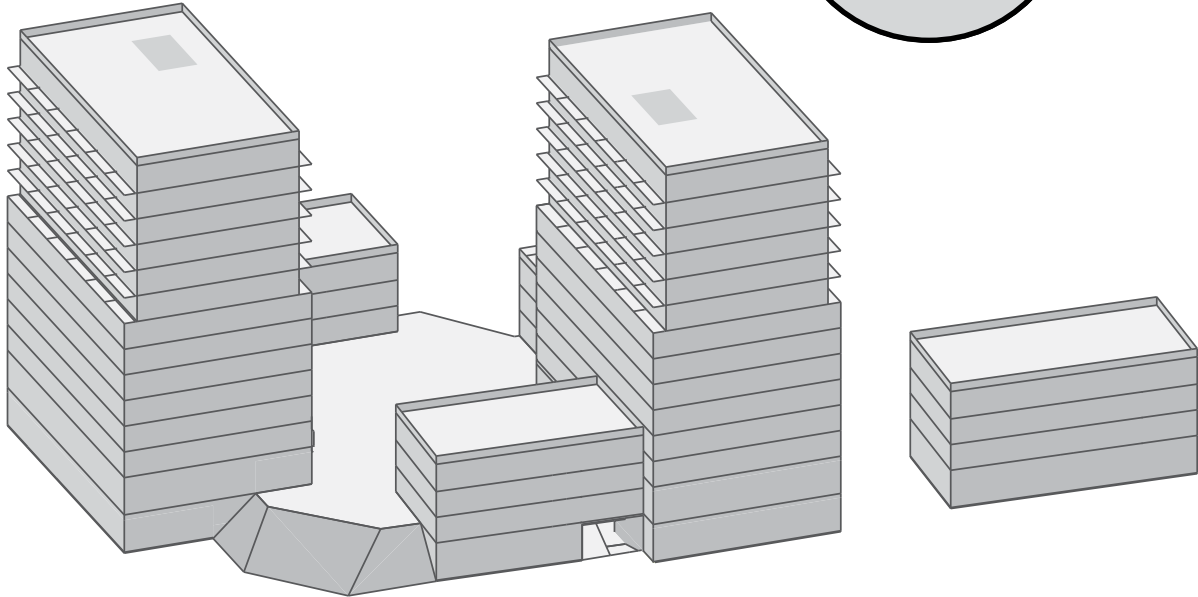
WONINGBOUW: CONVENTIONEEL

schetsontwerp

Paris Proof
184
kgCO₂/m²

430
kgCO₂/m²

+ 435 GWP
- 5 CO₂ opslag
+ 12 660 ton CO₂



concrete structure concrete cores concrete floors
brick facade bitumen roof rockwool insulation

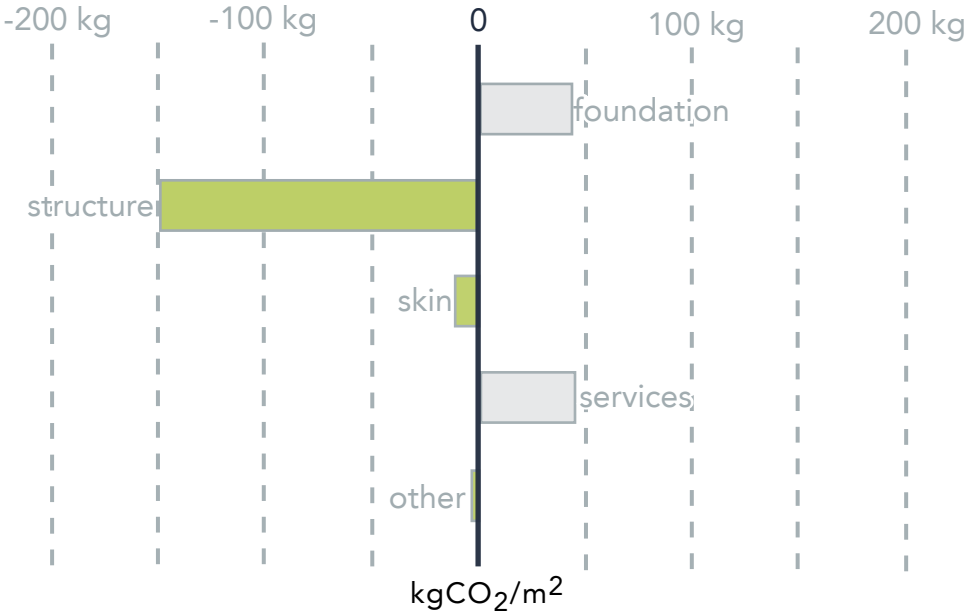
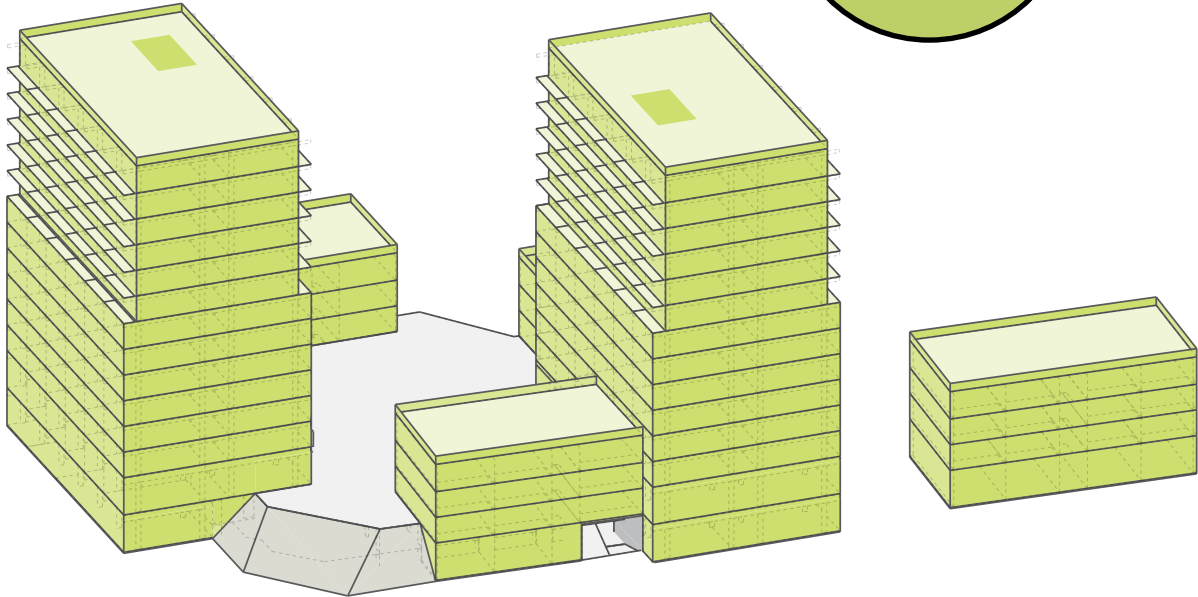
RESIDENTIAL: MAXIMUM BIOBASED

residential sketch design

Paris Proof
184
kgCO₂/m²

-61
kgCO₂/m²

+ 218 GWP
- 279 CO₂ opslag
- 1 787 ton CO₂



CLT&glulam structure and floors timber facade
CLT cores green roofs organic insulation

An aerial photograph of a residential neighborhood. The houses are arranged in a grid-like pattern with a mix of blue and orange roofs. A large orange circle with a white outline is centered over the middle of the neighborhood. The text 'HOE GAAN WE LEVEN?' is written in white capital letters across the center of the circle. In the bottom left corner, there is a logo for 'CARBONLAB' and in the bottom right corner, there is a logo for 'GROUPA'.

HOE GAAN WE LEVEN?



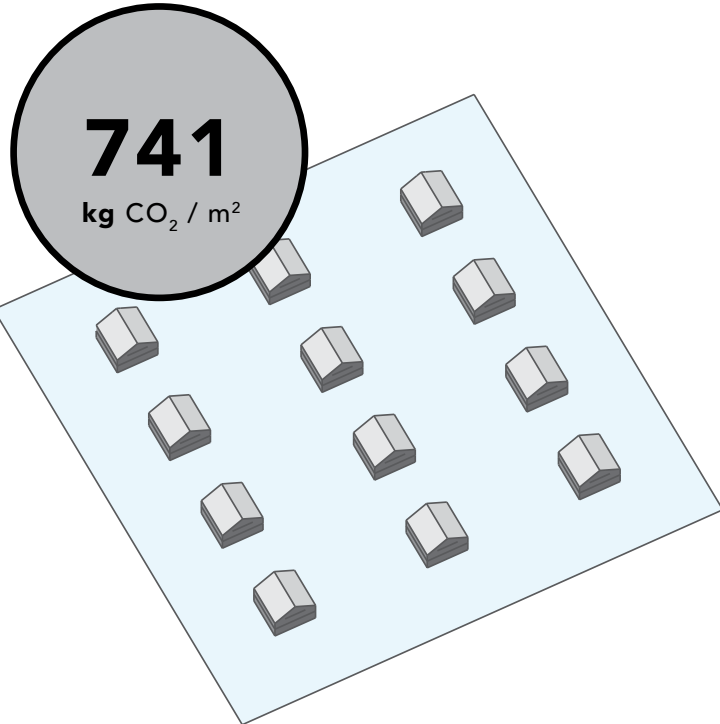
HOE GAAN WE LEVEN?



TERUG NAAR DE COMPACTE GEDEELDE STAD?

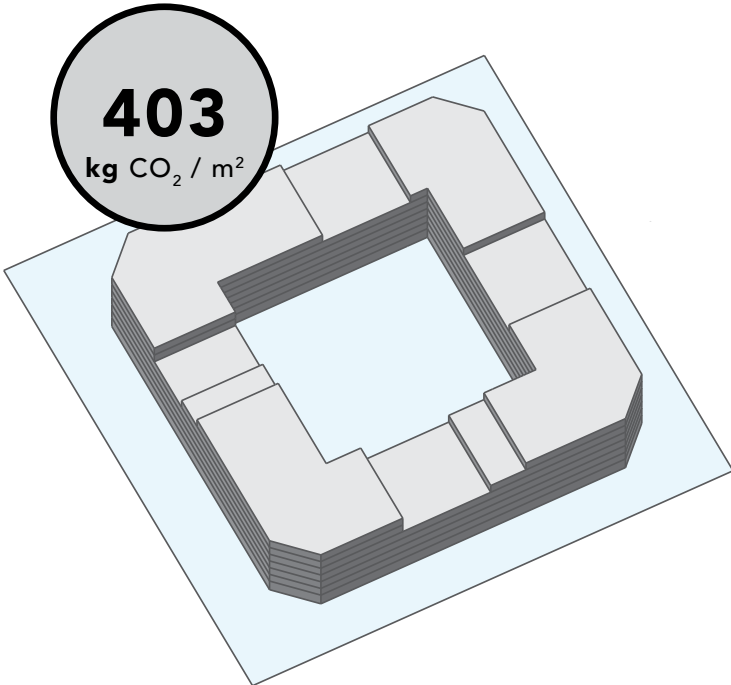
ONTWERP CONVENTIONEEL

3 urbane modellen vergeleken



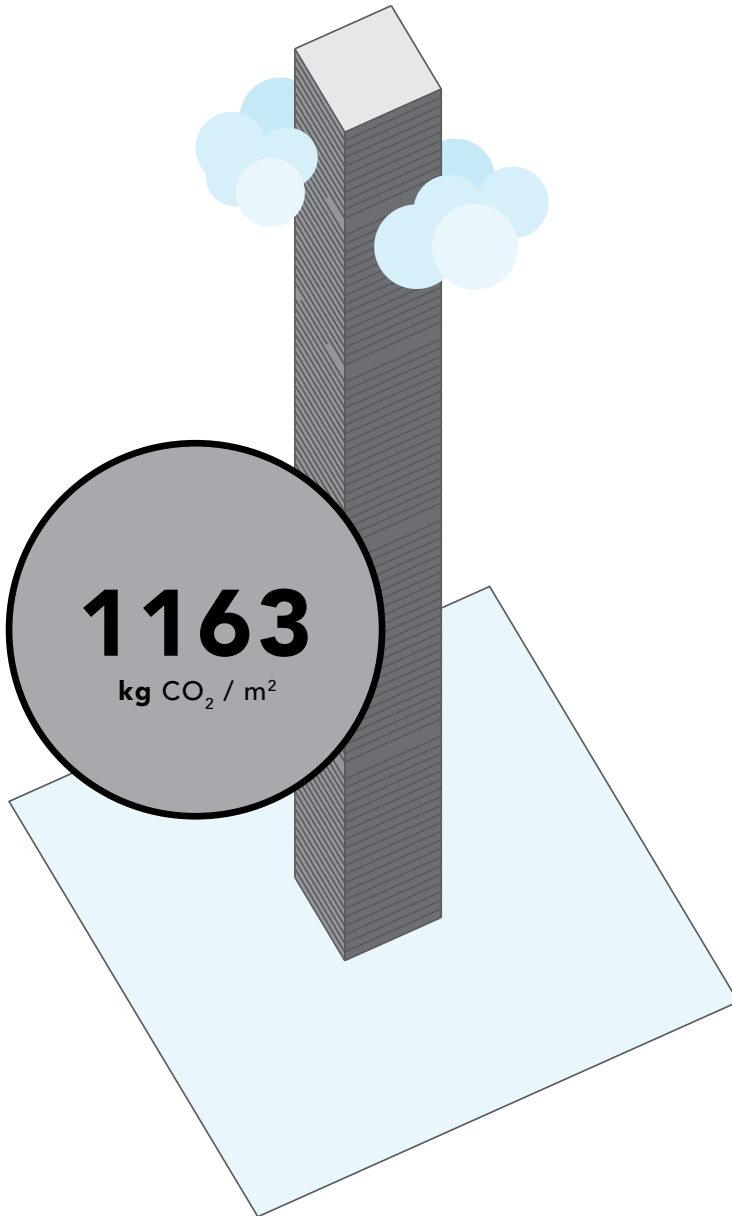
**MODEL 1
SPRAWL**

24 units
4.320 m² floor area
3.201.120 kg CO₂ eq
20.000 m² land area



**MODEL 2
BLOCK**

370 units
71.486 m² floor area
28.808.858kg CO₂ eq
20.000 m² land area

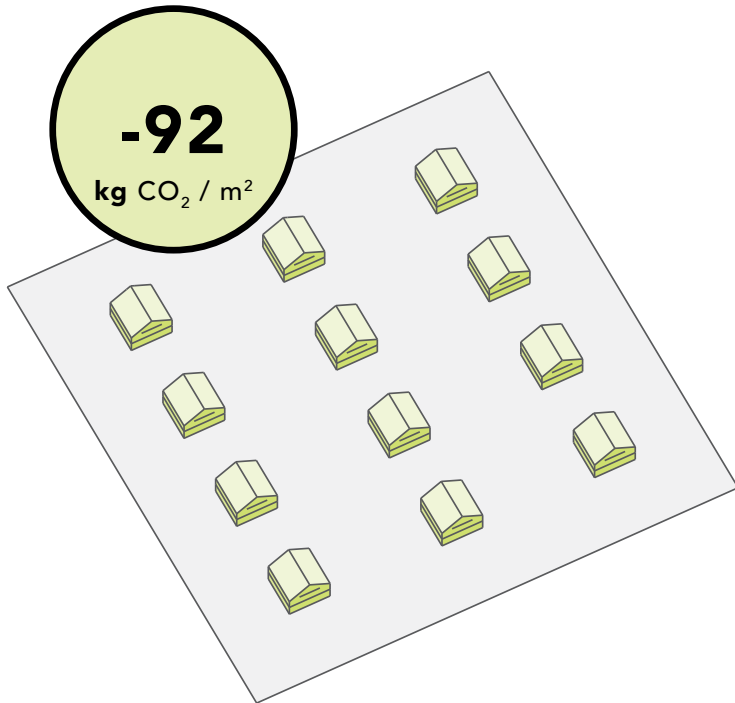


**MODEL 3
HIGHRISE**

104 luxury units
70.841 m² floor area
82.388.083kg CO₂ eq
20.000 m² land area

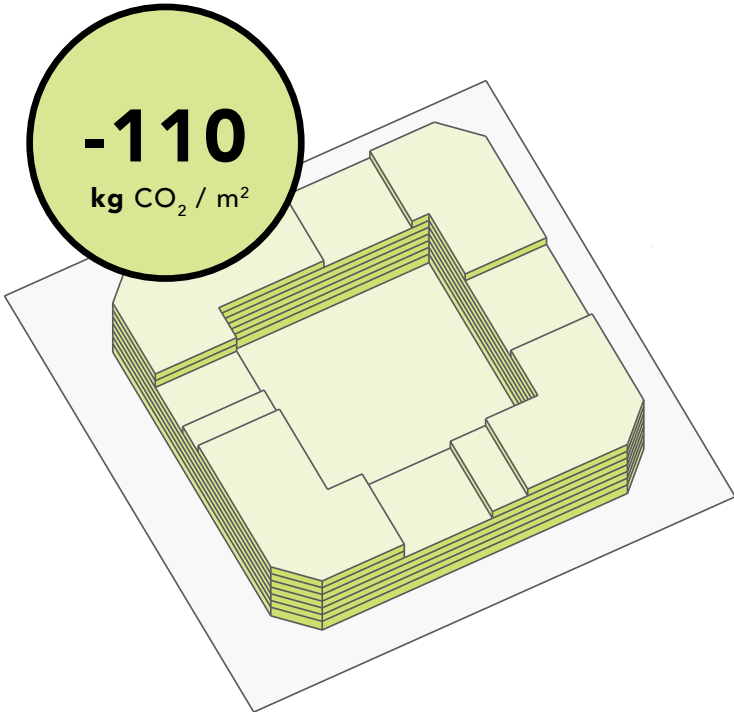
ONTWERP HYBRIDE / BIOBASED

3 urbane modellen vergeleken



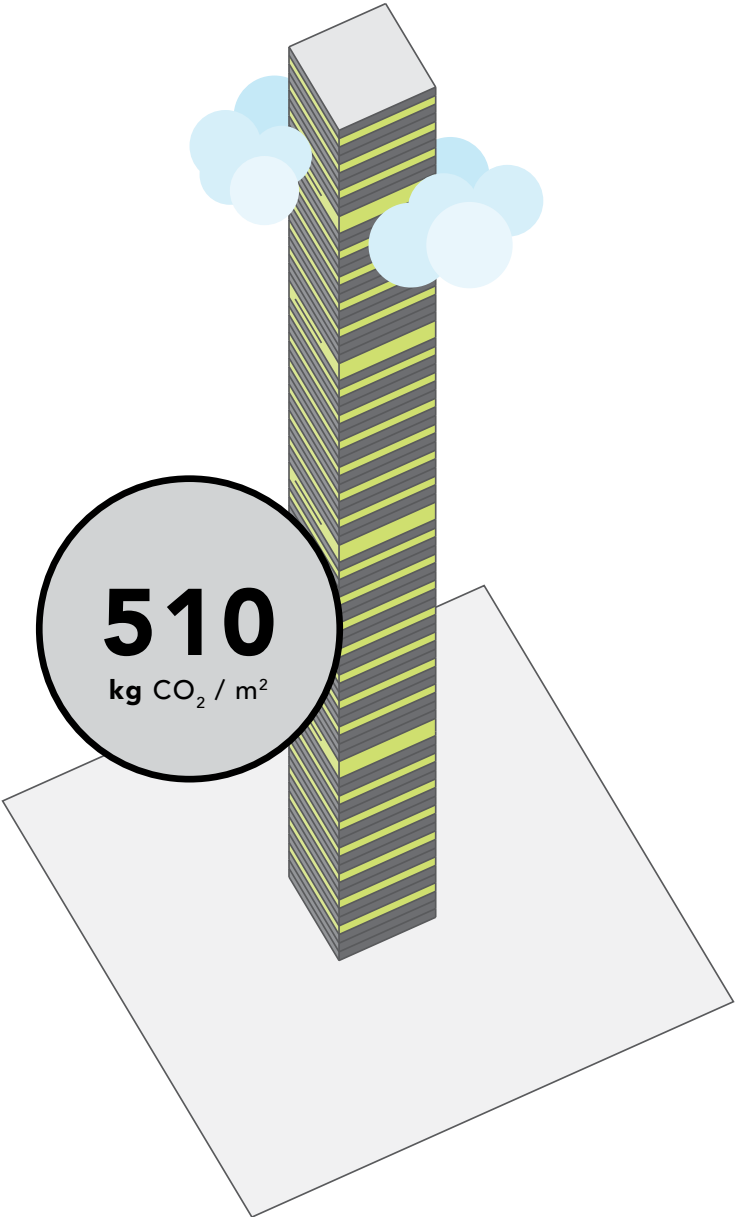
MODEL 1
SPRAWL

24 units
4.320 m2 floor area
-397.440 kg CO2 eq
20.000 m2 land area



MODEL 2
BLOCK

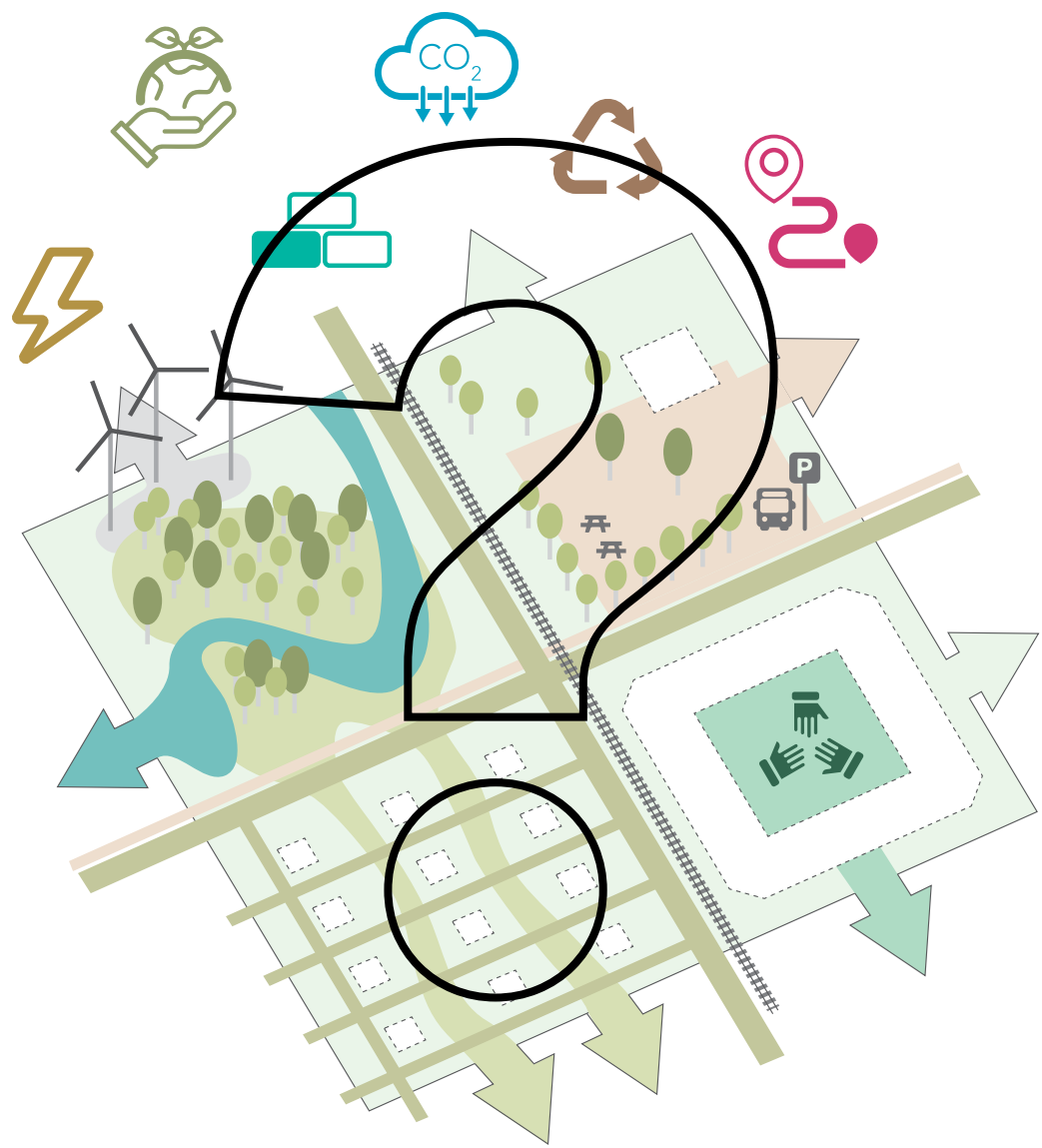
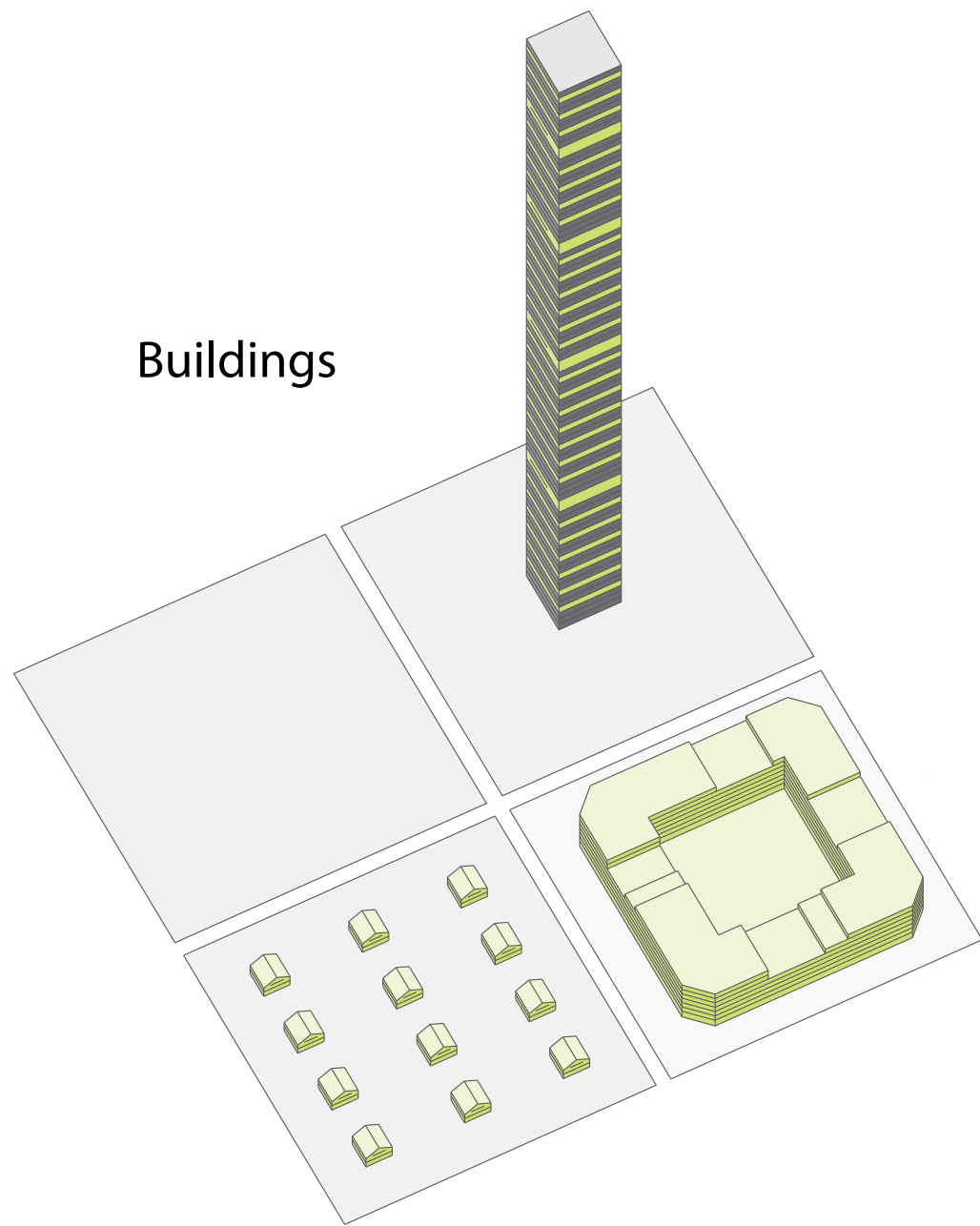
370 units
71.486 m2 floor area
-7.863.460 kg CO2 eq
20.000 m2 land area



MODEL 3
HIGHRISE

104 luxury units
70.841 m2 floor area
36.128.910kg CO2 eq
20.000 m2 land area

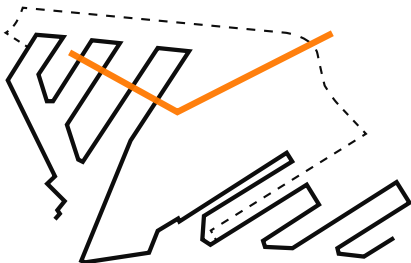
KLIMAATPOSITIEVE STEDENBOUW?



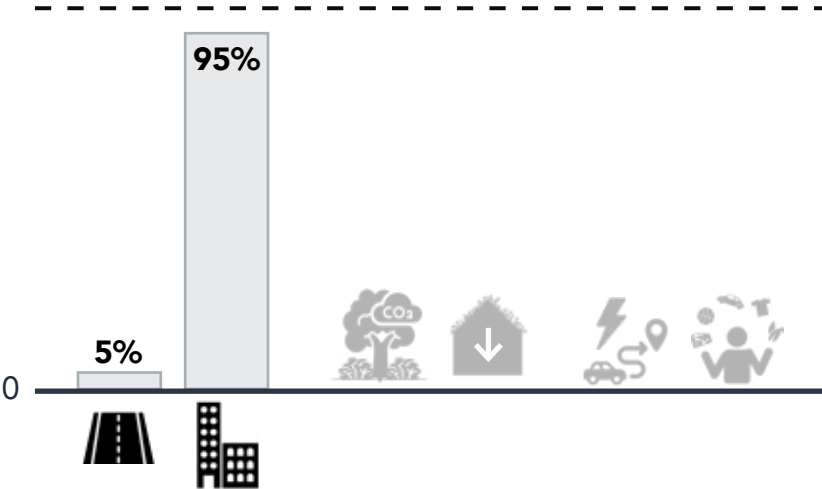
CLIMATE POSITIVE M4H ROTTERDAM?



CONVENTIONEEL DRAFT



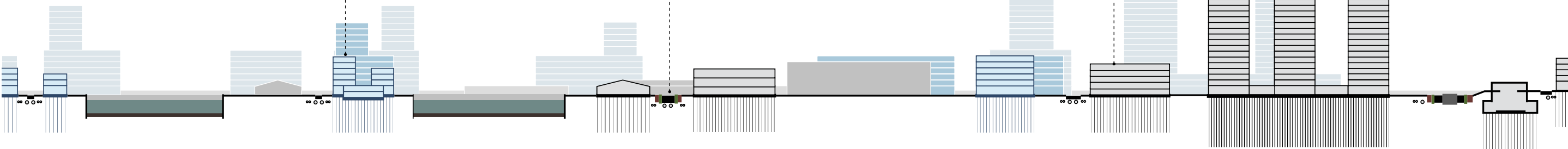
until 2050
846 796
 Ton CO₂



New buildings
723 553
 Ton CO₂

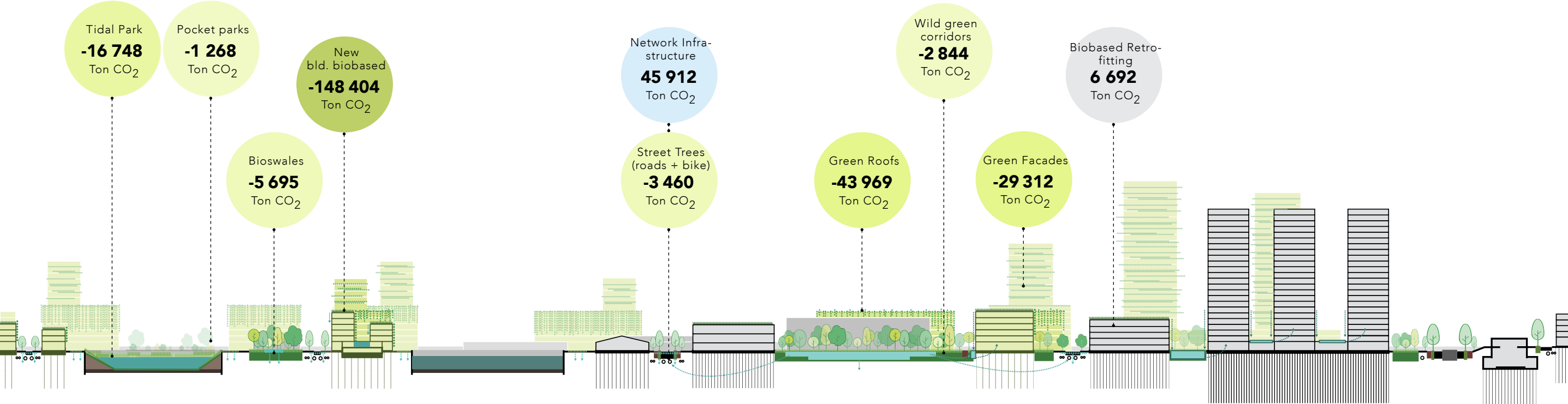
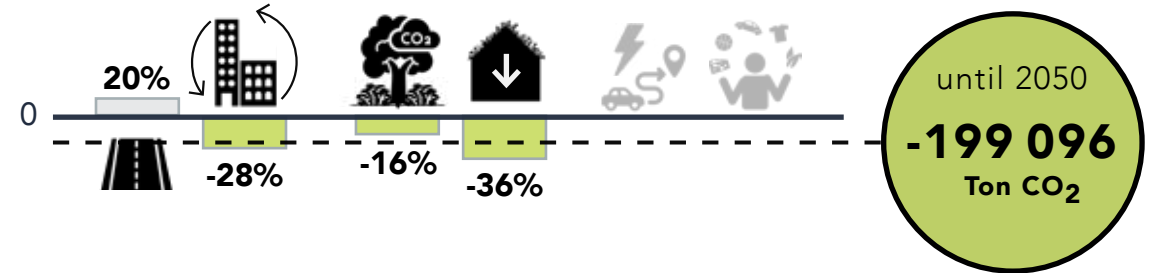
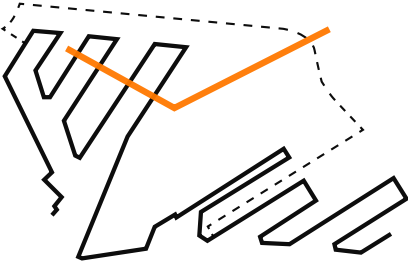
Network Infra-structure
45 912
 Ton CO₂

Retrofit Build-ings
77 330
 Ton CO₂



*early calculations' results

BIOBASED + GREENING DRAFT



*early calculations' results

SERIOUS GAME KLIMAATPOSITIEF M4H!



BEWUSTZIJN VERGROTEN:

BESCIKBARE MIDDELEN

**VERHOUDINGEN
TUSSEN MIDDELEN**

HET KAN NU AL!



CARBONSTORIES

2023 - 2024

21 September 2023

CO2 transition, the role of architect

GROUP A CARBONLAB

MVRDV NEXT

Urban Climate Architects,
La-Di-Da

30 November 2023

Circularity and Carbon

Metabolic

New Horizon

Re-Born

TU-Delft







GROUP A

CARBONLAB

NATIONALE BIOBASED CONFERENTIE

