

CONCRETE FUTURE

Low Carbon and Near Zero Carbon Definitions for Procurement - Webinar

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18 July 2023

Members Only

COMPETITION LAW REMINDER

1. Purpose

To remind all participants of their obligations under competition law.

2. Reminder

All participants are committed to fair competition and compliance with competition law and will only discuss matters that are legitimate to deliberate among competitors. Meeting participants will in particular refrain from disclosing, sharing or exchanging competitively sensitive information.

The GCCA and each of its members is responsible for observing the requirements of competition law and members should make themselves familiar with their legal obligations, including as expressed in the GCCA Competition Compliance Policy. If any attendee has any concerns at any time during this meeting that discussions or conduct may be contrary to competition law, they should speak up immediately and ensure that their protest is included in the minutes, before leaving the meeting.

GCCA member companies and affiliates operate in almost every country of the world



Our Members

- Adani Cement (pending application)
- Asia Cement Corporation
- Breedon Group
- Buzzi Unicem
- Cementir Holding
- Cementos Argos
- Cementos Moctezuma
- Cementos Molins
- Cementos Pacasmayo
- Cementos Progreso
- CEMEX
- Çimsa Cement
- CNBM
- CRH
- Dalmia Cement
- Dangote
- Fletcher Building
- GCC
- Heidelberg Materials
- Holcim
- Huaxin Cement
- JK Cement
- JK Lakshmi Cement (pending application)
- JSW Cement
- Medcem
- Misr Cement Group
- Neshor Israel Cement Enterprises
- Norm Cement
- Orient Cement
- PT Solusi Bangun Indonesia
- SCHWENK Zement
- Secil
- Siam Cement Group
- Siam City Cement
- Taiheiyo Cement
- Taiwan Cement Corporation
- TITAN Cement Group
- UltraTech Cement
- UNACEM
- Vassiliko Cement
- Votorantim Cimentos
- YTL Cement

Our Affiliates - partner national and regional industry associations

- Asociación de Fabricantes de Cemento Portland – Argentina
- Asociación de Productores de Cemento – Peru
- Associação Brasileira de Cimento Portland – Brazil
- Association of German Cement Manufacturers (VDZ) – Germany
- Association Professionnelle des Cimentiers – Morocco
- Betonhuis – Netherlands
- BIBM – Europe
- CANACEM – Mexico
- Canadian Precast Prestressed Concrete Institute
- Cement Association of Canada
- Cement Concrete & Aggregates Australia
- Cement Industry Federation – Australia
- Cement Manufacturers Association – India
- Cement Manufacturers Ireland
- Concrete NZ – New Zealand
- European Cement Association (CEMBUREAU)
- European Federation Concrete Admixtures
- European Ready Mixed Concrete Organisation
- Federación Iberoamericana del Hormigón Premezclado – LatAm
- Federación Interamericana del Cemento (FICEM) – LatAm
- Japan Cement Association
- Korea Cement Association
- Mineral Products Association United Kingdom
- National Ready Mixed Concrete Association – USA
- Portland Cement Association – USA
- Thai Cement Manufacturers Association
- The Spanish Cement Association (Oficemen)
- Turkish Cement Manufacturers Association (TürkÇimento)

Partnering and working with stakeholders



United Nations



European Bank for Reconstruction and Development



SCIENCE BASED TARGETS



Agenda

- 1. Introduction**
- 2. The challenge of low carbon concrete definition**
- 3. Low carbon procurement initiatives**
- 4. GCCA emerging policy recommendations**
- 5. Defining and using low carbon concrete bands**

Introduction

Use of low carbon definitions by external stakeholders

- Policy
- Investment
- Project design
- Purchase

Focus	Stakeholder	Primary use of definition
Production focused	Government	Policy and regulation
	Investor	Investment criteria
	Climate focused NGOs, not for profit organisations	Lobby and challenge
Product focused	Government client	Target, ambition, project brief
	Private client (including investors)	
	Architects	Design and specification
	Structural engineer	
	Concrete contractor	Purchase

Use of low carbon definitions by external stakeholders

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Procurement



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Terminology

GWP: Global Warming Potential

ECO₂e: Embodied CO₂ equivalent

Embodied carbon

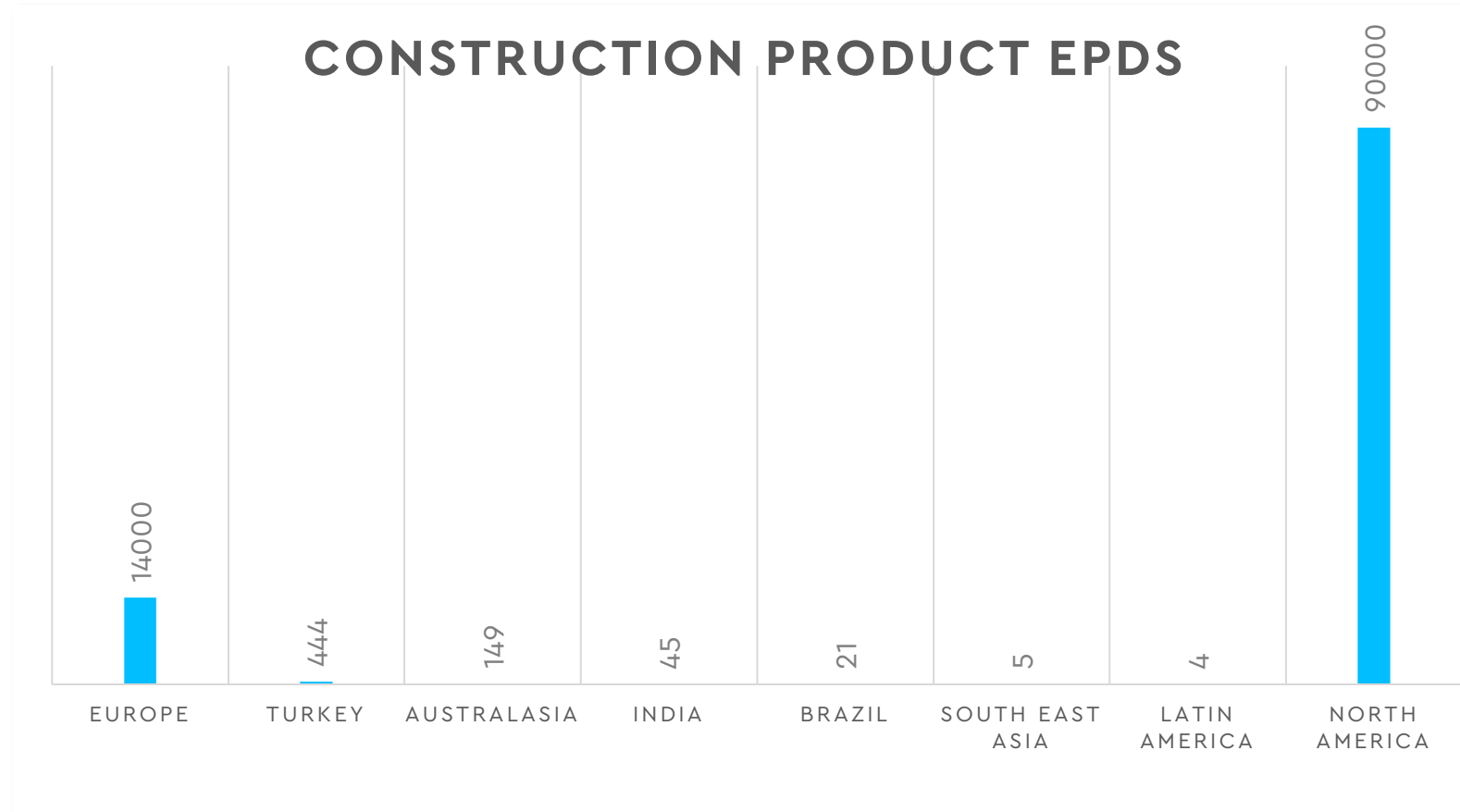
Carbon footprint

Carbon content

And for products, all the above, for the purposes of this presentation...

...defined in terms of scopes and life stages by EPD standards and PCRs

Countries are at different stages of the sustainability journey



EPDs

- Provide transparency on the environmental impact of a product, including GWP
- Conform to a rigorous, standardised methodology
- Our industry fought for EPDs to include modules A to D
- Risk of procurement systems adopting only modules A1 – A3 since the benefit of **recarbonation** will not be accounted (eg N American PCRs only require A1-A3 lifecycle assessment)

GWP of RMX concrete (indicative example)

Modules	GWP (kg CO2 eq.)	
	Without recarbonation	With recarbonation
A1-A3	272.2	272.2
A4-A5	27	26.6
B1-B7	0	-5.8
C1-C4	27.63	16.4
D	-12.85	-12.85
total	313.98	296.55

6% reduction

The challenge of low carbon concrete definition

The challenge of low carbon concrete definition

Why a challenge?

Embodied carbon of concrete depends on:

- A spectrum of products: Type and application
- Location
- Material availability
- Construction needs

What terms are being used

- 'low-carbon'
- 'lower carbon'
- 'sustainable' concrete

Simple but limited complex?

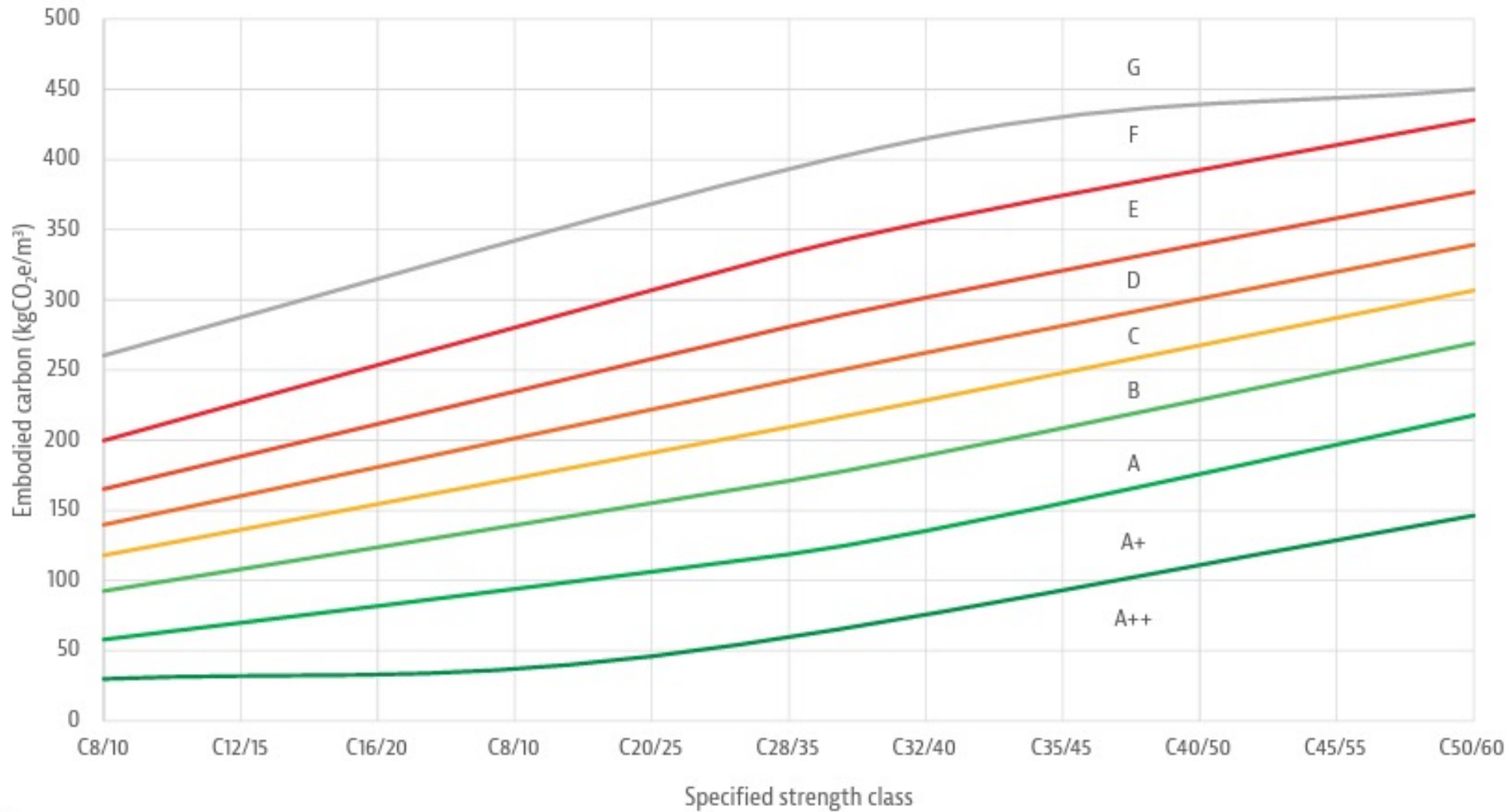
OR

perfect and

A spectrum of low carbon framework

	SIMPLE	GOOD	PERFECT/COMPLEX
PROs	CAN BE UNDERSTOOD & CAN BE APPLIED		ACCURATE
CONs	Comparisons are less meaningful. At extreme simplicity it is even useless (c.f. complex material)		Data is not available to develop the benchmarks. At extreme there are millions of benchmarks

Fig 1.2: GCB/LCCG benchmark ratings for embodied carbon, normal-weight concrete, LCA stages A1-A3 (ready-mix: cradle to batching plant gate; precast: cradle to mould)



Notes :

- The benchmark ratings are based on embodied carbon of normal weight concrete mixes used recently in the UK
- Performance requirements may make it impractical to achieve some ratings for a particular application
- Achieving a rating of A, A+ or A++ through use of a high proportion of GGBS with an associated requirement to significantly increase the total binder content (kg/m³) may not be an effective method of reducing global GHG emissions

- Opportunities for reducing the carbon rating may typically be achieved by adjusting: type and % of SCM, requirements for early strength gain, consistence, environment (e.g. by use of protective barrier layers), minimum cement content (kg/m³), w/c ratio, use of admixtures, type and grading of aggregates, age at which the specified strength must be achieved, sources of constituents

Simple but limited

What critiques say...

Proposed **SIMPLE UK concrete banding, by strength only, reveals limitations to account for complexities**, such as:

- (i) different **durability** requirements for different conditions
- (ii) different **application**, eg, piling, post-tensioned,
- (iii) different **placement**, eg, pump, skip, flowing, self compacting
- (iv) different **location** of the project, eg, different constituents availability.
- (v) different **weather** and exposure conditions;

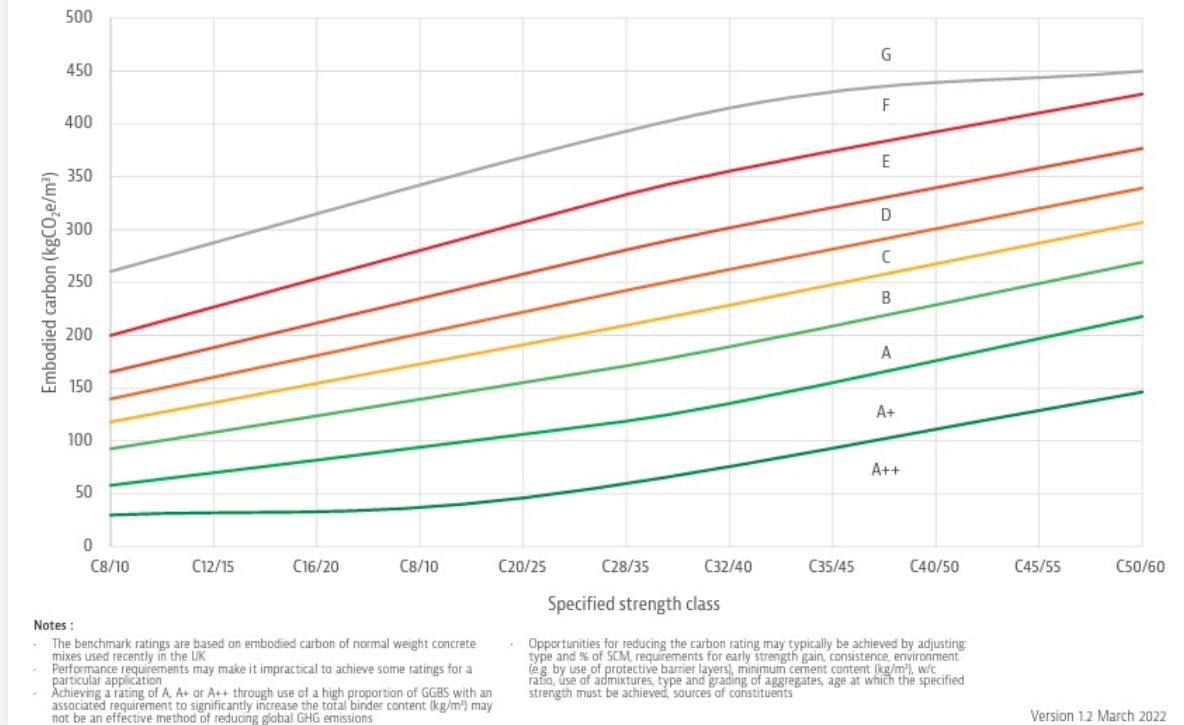
...all require/result in different compositions which impacts ECO_2 .

If they are ignored, as in strength only banding, then system is limited.

Adapted from THE CONFUSED WORLD OF LOW CARBON CONCRETE Kanavaris & Scrivener 2023

[GCCA Global Cement and Concrete Association](#)

Fig 1.2: GCB/LCCG benchmark ratings for embodied carbon, normal-weight concrete, LCA stages A1-A3 (ready-mix: cradle to batching plant gate; precast: cradle to mould)



Source: Low Carbon Concrete Routemap, ICE 2022

Defining low(er?) carbon and near zero concrete

"Do not let perfection be the enemy of the good" - Voltaire

Do not seek PERFECT and deliver no progress

Do not seek SIMPLE and deliver non functional

Can we define a "GOOD" which is good enough.

Separate

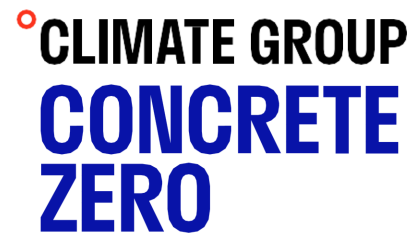
- value setting for definitions (benchmarks/references/baselines/banding)
- from
- value setting of targets

Low carbon procurement initiatives Cement and Concrete

Low carbon procurement initiatives (global)

The following slides provide an overview of the following low carbon procurement initiatives:

- First Movers Coalition (FMC)
- Concrete Zero
- IDDI



FMC sits in an ecosystem of International Organizations, processes and initiatives relevant to industry decarbonization and that can help advance its mission

General organizations, processes and milestone moments



**COP28
UAE**



Setting & tracking markers of decarbonization



SCIENCE
BASED
TARGETS



MISSION
POSSIBLE
PARTNERSHIP

Supporting policy decisions



LEADIT
LEADERSHIP GROUP
FOR INDUSTRY
TRANSITION



MISSION
INNOVATION
accelerating the clean energy revolution



STOCKHOLM +5



CLEAN ENERGY
MINISTERIAL
Accelerating the Global Clean Energy Transition



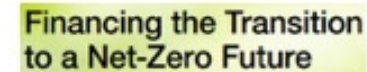
Aggregating demand



THE CLIMATE GROUP
INDUSTRIAL DEEP
DECARBONISATION
AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL



Catalyzing finance



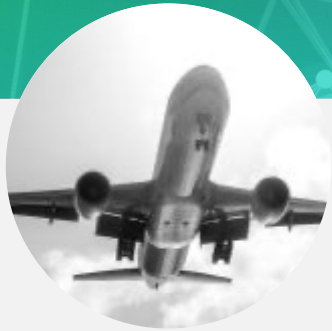
Eight sectors in scope of the FMC, representing >30% of global carbon emissions today & most new tech needs

Launched at COP26

Launched at WEF
Annual Meeting 2022

Launched at COP27

To be launched in 2023



Aviation



Steel



Aluminum



Cement / Concrete



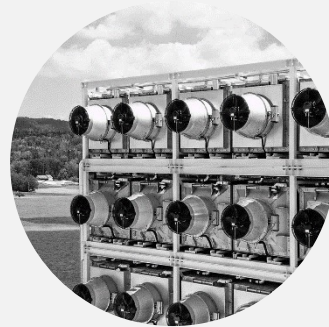
Chemicals
(Plastics – PET,
PP and PE)



Shipping



Trucking



Carbon Removal

Overview of FMC

106

total commitments from 81 companies and 1 non-profit organization across 7 sectors

...resulting in...

\$12B

in demand for near-zero-emission products

...supported by...

12

government partners representing 50% of global GDP

Aluminum
Apple
Ball Corp
Bang & Olufsen
CBA
Constellium
Ford Motor Company
General Motors
Logitech
Novelis
PepsiCo
Speira
Trafigura
Volvo Group

Aviation
Airbus
American Express GBT
Apple
Autodesk
Aveva
Bain & Company
Bank of America
Boeing
Boston Consulting Group
Deloitte
Delta Airlines
Deutsche Post DHL Group
Eni
EY
FedEx
Fortescue Metals Group
Lufthansa Group (Lufthansa German Airline, Swiss International Airlines, Austrian Airlines and Brussels Airlines)
Nokia
PWC
Rio Tinto
Salesforce
Schneider Electric
United Airlines
University of Michigan
Vattenfall

Carbon Removal
AES
Alphabet
Boston Consulting Group
EGA
Microsoft
Mitsui O.S.K. Lines
Salesforce
SwissRe
Trafigura

Cement / Concrete
CCC
Etex
General Motors
RMZ
Vattenfall
Ørsted

Trucking
Agility
Cemex
Dalmia Cement
Fortescue Metals Group
HeidelbergCement
Holcim
National Grid
Norge Mining
PepsiCo
Rio Tinto
Scania
SSAB Swedish Steel
Vattenfall
Volvo Group

Shipping
A.P. Møller – Mærsk
Agility
Aker ASA
Aker Biomarine
Amazon
BHP
Fortescue Metals Group
Höegh Autoliners
Logitech
Mitsui O.S.K. Lines
Rio Tinto
Trafigura
Western Digital
Yara International

Steel
Aker Solutions
Alfa Laval
Bharat Forge
CCC
Ecolab
Enel
Engie
Ford Motor Company
Fortescue Metals Group
General Motors
Iberdrola
Invenergy
Johnson Controls
Mahindra
Mainstream Renewable Power
Marcegaglia
Ørsted
ReNew Power
Scania
Trane Technologies
Vattenfall
Vestas
Volvo Group
ZF Friedrichshafen AG



Cement and Concrete | Detailed commitment

Subject of demand signal

First Movers will make a commitment for either cement or concrete:

1. **Cement** with embodied carbon below 184 kg CO₂e/ton
2. **Concrete** that meets the embodied carbon limits below

Specified compressive strength (f'c in psi)	Embodied carbon (kg CO ₂ e/m ³)
0 - 2500 psi	70
2501 - 3000 psi	78
3001 - 4000 psi	96
4001 - 5000 psi	117
5001 - 6000 psi	124
6001 - 8000 psi	144

Technological pathways

Solutions may include (but are not limited to):

- **CCUS**
- **Non-fossil-based SCMs**
- **Fuel switching**
- Renewable electricity
- Efficiency improvements
- Decarbonated raw materials
- Alternative cement chemistries
- CO₂ mineralization during curing

Out-of-scope:

- [By 2035] Fossil-based SCMs (i.e., GGBS and fly ash)
- Carbon offsets

Bolded abatement technologies seen as most critical to meeting FMC targets according to FMC research



ConcreteZero members – May 2023

Architecture

GRIMSHAW

Engineering



Contractors



Construction



Developers



Concrete Zero: Minimum Commitment Criteria

2050 Long Term Commitment



Commitment to [procuring/specifying/stocking]

100% Net Zero concrete.

2030 Interim Commitment

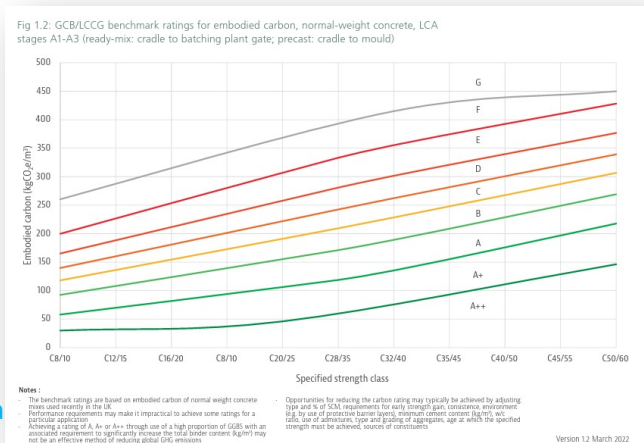


50% Level B concrete (LCCG ratings)*

2025 Interim Commitment



30% of Level B concrete (LCCG ratings)*
 *Additional qualitative requirements apply





**INDUSTRIAL DEEP
DECARBONISATION**

AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

THE INDUSTRIAL DEEP DECARBONISATION INITIATIVE (IDDI)



"If you make it we will buy it"

The Green Procurement Pledge

Within the next three years IDDI expects to have enabled a minimum of ten governments to pledge to reducing embodied carbon emissions of all major public construction projects by 2050 in line with a 1.5C global warming trajectory.



Governments joining IDDI will chose the level of ambition for their pledge:

Level One:

Starting **no later than 2025**, require **disclosure** of the embodied carbon in cement/concrete and steel procured for public construction projects.

Level Two:

(in addition to Level 1):
Starting **no later than 2030**, conduct **whole project life cycle assessments** for all public construction projects, and, by 2050, achieve net zero emissions in all public construction projects.

Level Three:

(in addition to Levels 1 and 2):
Starting **no later than 2030**, require **procurement of low emission cement/concrete and steel** in public construction projects, applying the highest ambition possible under national circumstances.

Level Four:

(in addition to Levels 1, 2 and 3):
Starting **in 2030**, require **procurement** of a share of cement and/or crude steel from near zero emission material production for signature projects.

IDDI government partners will provide information on their progress annually and share their learnings with other participating governments.

worldsteel
ASSOCIATION

Umwelt
Bundesamt


Department for
Energy Security
& Net Zero

SIS
Swedish
Institute for
Standards


Federal Ministry
for Economic Affairs
and Climate Action

Canada
National Research
Council Canada
Conseil national de
recherches Canada

WORLD
ECONOMIC
FORUM

 Responsible
Steel standards &
certification

 Wirtschaftsvereinigung
Stahl


NRMCA
NATIONAL READY MIXED
CONCRETE ASSOCIATION

CLF
Carbon
Leadership
Forum

Agora
Energiewende 

gc
ca
Global Cement and Concre
Association

 CEMENTIS

 Building
Transparency

 SMART
EPD

CLIMATE GROUP
CONCRETE
ZERO

vdz

Jernkontoret

Environmental Product Declarations (EPDs)

Do:

- Provide transparency about the environmental impact of a product, including global warming potential (GWP): $t\ CO_2e / t\ product$ (or $kg\ CO_2e$)
- Conform to a rigorous, standardised methodology (or one of several)

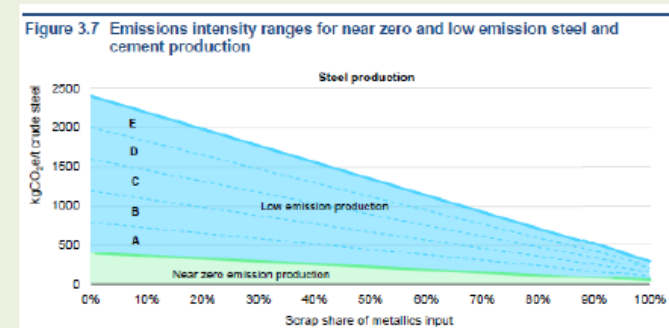
Do not:

- Define what can be called low- or near-zero emission
- Certify that a product is low emission

Low- and near-zero emission thresholds

Do:

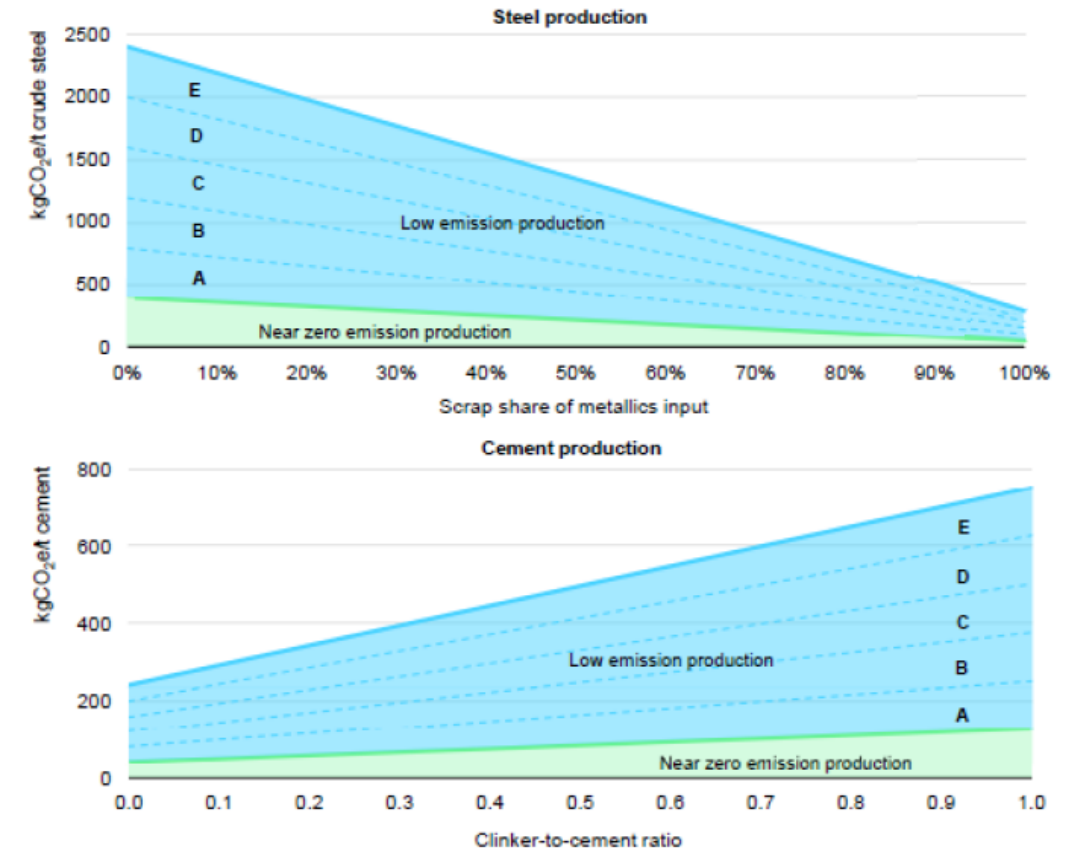
- Define the quantity of embodied emissions at which a product can be described as low- or near-zero emissions, described as:
 - $t\ CO_2e / t\ product$ (or $kg\ CO_2e$)
- Relate to a highly specific point in the value chain e.g., crude steel, cement



IEA LOW- AND NEAR-ZERO EMISSION THRESHOLDS

- Relate to the production of *crude steel* and *cement*
- Governments can compare information contained in EPDs and these thresholds to understand what emission intensity range or 'band' their procurement fits in to
- Governments can set targets for greening procurement based on these bands
- IEA also proposes a formula to calculate the overall share of low emission production at a national level, but this is beyond the scope of the IDDI

Figure 3.7 Emissions intensity ranges for near zero and low emission steel and cement production



Level	Min. CO ₂ reduction vs. local baseline
1 Star	30
2 Stars	40
3 Stars	50
4 Stars	60

CSC-Certificate



PREREQUISITES

- P1 Ethical and Legal Compliance
- P2 Human Rights
- P3 Indigenous People Rights
- P4 Environmental and Social Impact
- P5 Traced Materials

MANAGEMENT

- M1 Sustainable Purchasing
- M2 Environmental Management
- M3 Quality Management
- M4 Health & Safety Management
- M5 Benchmark

ENVIRONMENTAL

- E1 Life Cycle Impact
- E2 Land Use
- E3 Energy & Climate
- E4 Air Quality
- E5 Water
- E6 Biodiversity
- E7 Secondary Materials
- E8 Transport
- E9 Secondary Fuels

SOCIAL

- S1 Local Community
- S2 Health Product Information
- S3 Occupational Health & Safety
- S4 Labor Practices


ECONOMICS

- B1 Local Economy
- B2 Ethical Business
- B3 Innovation
- B4 Feedback Procedure

CHAIN OF CUSTODY

- C1 Cement
- C2 Aggregates

Level	Min. volume-% R-material
1 Star	10
2 Stars	20
3 Stars	40
4 Stars	80



CO₂-Module

Plant Requirements


- L1 CSC certification Silver+
- L2 75% coverage of the cement supply chain
- L3 Monitoring of GHG emissions
CSC certification criterion E3.02 fulfilled
- L4 Quality Management: QMS

Product Requirements

- L5 Concrete Mix with CO₂ reduction vs. baseline \geq 30%

The R-Module and the CO₂ Module are **voluntary product add-ons** to the traditional CSC-certificate and

- aim at creating transparency and credibility
- can be used as a marketing tool for concrete to lead the circularity dialogue and the low CO₂ definition of concrete



R-Module

Plant Requirements

- R1 CSC certification Silver+
- R2 Traced R-material supply
- R3 R-material Consumption
- R4 Quality management
QMS, Use of certified R-material

Product Requirements

- R5 Concrete mix with minimum R-material content \geq 10%

Low carbon procurement initiatives (local)

The following slides provide an overview of the following low carbon procurement initiatives:

- Marin County's Low Carbon Concrete Law
- New Jersey Low Carbon Concrete Law

Marin County's Low Carbon Concrete Code

Marin County's Low Carbon Concrete Code mandates that residential and commercial construction:

1. Replace Portland cement with supplementary cementitious materials, including fly ash, slag, and ground glass;
2. Minimise the amount of cement in mixes; and
3. Change the requirements for how quickly concrete has to cure to allow for less cement to be used.

	Cement limits for use with any compliance method 19.07.050.2 through 19.07.050.5	Embodied Carbon limits for use with any compliance method 19.07.050.2 through 19.07.050.5
Minimum specified compressive strength f_c , psi (1)	Maximum ordinary Portland cement content, lbs/yd ³ (2)	Maximum embodied carbon kg CO ₂ e/m ³ , per EPD
up to 2500	362	260
3000	410	289
4000	456	313
5000	503	338
6000	531	356
7000	594	394
7001 and higher	657	433
up to 3000 light weight	512	578
4000 light weight	571	626
5000 light weight	629	675
Notes		
(1) For concrete strengths between the stated values, use linear interpolation to determine cement and/or embodied carbon limits.		
(2) Portland cement of any type per ASTM C150.		

New Jersey Low Carbon Concrete Law

- Concrete producers who supply at least 50 yards of concrete for state funded construction projects will be eligible for a performance-based tax credit if the concrete delivers quantifiable reductions in embodied carbon
- Prior to the implementation of the tax credit program, the New Jersey Department of Environmental Protection (DEP) will be charged with establishing embodied carbon baselines for concrete measured in GWP
- Producers who submit certified EPDs that validate GWP scores that fall below this baseline will be awarded a tax credit of up to 8% of the total cost of the contract

GCCA Policy recommendations (draft)

Emerging GCCA Policy/Position Paper

GCCA and its members welcome the creation of market demand for low-carbon and near zero carbon construction and decarbonised value chains,

and more specifically,

they welcome stimulation of demand for low-carbon and near zero cement and concrete products through public procurement policy.

Emerging GCCA Policy/Position Paper

Important context for product level low carbon procurement

To achieve the optimum design and performance, comparison of construction materials should:

- Only be made in the context of, and at the scale of, a whole building or infrastructure asset
- Consider the full range of economic, technical and sustainability performance issues
- Assess performance over the whole lifecycle of a building or infrastructure asset

Concrete can minimise the need for services and finishes and hence **per square metre flooring metrics** for overall construction is the preference of cement/concrete industry to capture the reduced GWP impacts afforded by concrete.

Emerging GCCA Policy/Position Paper

Low carbon procurement of products should:

- be based on comparison of products with the same functional performance
- use recognised Environmental Product Declarations
- use definitions of low/lower carbon and near zero carbon that are commonly agreed and unambiguous

Definitions themselves, or reference or benchmark values from which they are sometimes derived, should recognise the:

- wide range of concrete products
- geographical variation in embodied carbon of cement and concrete products

Targets for reduction compared with definitions/references/benchmarks must be:

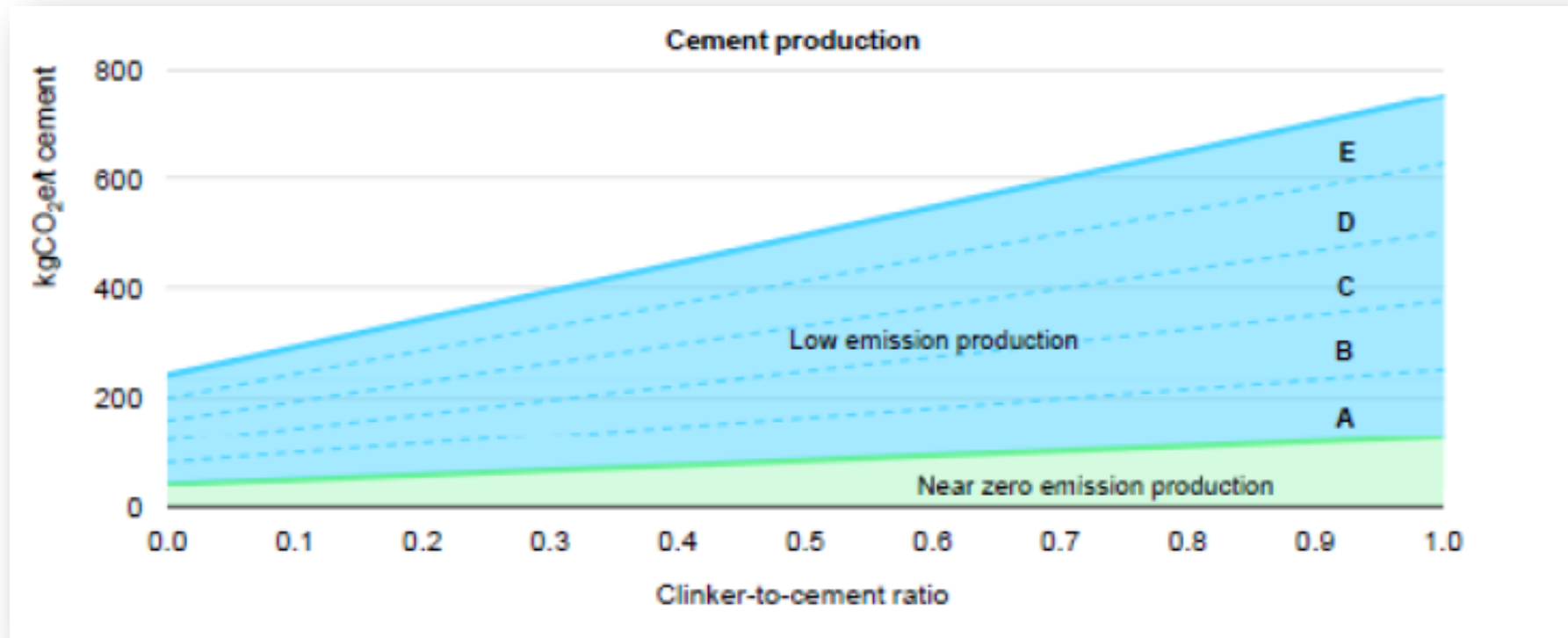
- stretching to deliver demand signal wanted by manufacturing industry
- challenging enough to avoid green washing
- realistic to ensure customers can find suppliers
- congruent with GCCA global roadmap taking into account national opportunities or national roadmaps where they exist

Emerging GCCA Policy/Position Paper

- Low carbon product procurement can be at cement level or concrete level to suit the typical supply and construction practice in a country
- Concrete is considered in different strength bands
- Reference values for products can and should be determined typically for each country, and more locally at state level for large countries such as China, India, and USA
- GCCA members recommend that the reference/benchmark is set to incentivise all decarbonisation levers along the manufacturing value chain.
- Targets in terms of % reduction cannot be set in isolation of other factors. There needs to be an inter-relationship between magnitude of **targeted reduction**, percentage of **volume** purchased for which the target applies, and the **time** period until the target is to be achieved.

- Working with IDDI**
- **Cement**
 - **Concrete**

IEA/IDDI Near Zero Cement



Note: The KgCO₂ eq. values used by IDDI are calculated based on a different scope than EPD methodology

Clinker to Cement ratio sliding scale

Cement

Sliding Scale for definitions of "low carbon" and "near zero" cement product has been rejected by GCCA , and IDDI has provided an opt out for countries.

- Justification/reasoning for rejection of sliding scale is that it negates the lever of SCMs which is a valid (and under used) decarbonisation lever for cement and concrete
- IEA explicitly justify the introduction of the sliding scale so that the definitions drive behaviour that focusses on the decarbonisation levers in clinker production

Concrete

The same arguments as above for cement, equally apply to concrete (perhaps even more so).

The developing proposal for concrete

Be congruent with IDDI definitions for Cement in terms of

- Same bands for all countries
- Five low carbon bands "A to E" , with equal spacing/range
- "Near zero" band defined by destination at 2050
- Upper bound of band "E" defined using current practice

- "F" and "G" bands introduced to allow wider engagement
- Based on GWP from EPDs
- Clinker/cement sliding scale NOT applied

IDDI essential requirement is consistent global reporting by countries

The developing proposal for concrete

Concrete divided into categories because it is not one product

- Categories based on strength classes, because that performance characteristic impacts more concretes than any other*
- Special readymixed concrete which is defined by other performance characteristics may need to be excluded at start of process
- Application to readymixed
- No recommendation for precast at this stage (precast GWP EPD includes embedded steel and factory process of casting, so comparison with thresholds/targets based on Readymixed GWP EPD is less valid)

**note that even this is a simplification because concrete's specified for a particular strength but different exposures may require different mixes and hence different ECO_2*

How to derive global low carbon concrete banding



How to derive global low carbon concrete banding

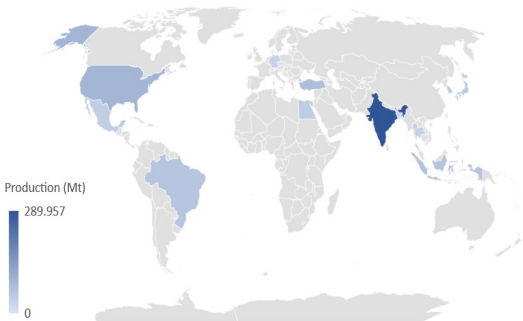
Select top major cement producers

Collect country level data for each strength

Normalise country data

Establish global banding using weighted averages

Global Cement Production



Country

India
United States
Turkey
Indonesia
Brazil
Japan
Egypt
Mexico
South Korea
Thailand
Germany
Bangladesh

How to derive global low carbon concrete banding

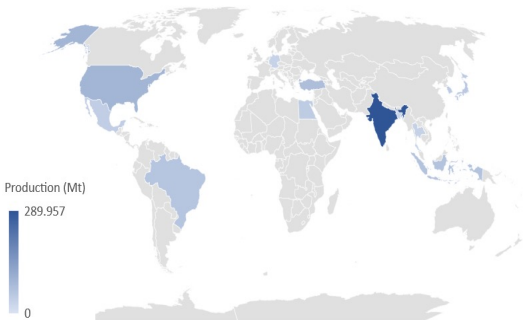
Select top major cement producers

Collect country level data for each strength

Normalise country data

Establish global banding using weighted averages

Global Cement Production



Country

India
United States
Turkey
Indonesia
Brazil
Japan
Egypt
Mexico
South Korea
Thailand
Germany
Bangladesh

1. Collect data per strength and per country using:

- Best practice for CEM I cement*
- Best practice for mix design* (i.e. powder content)
- Average values ** for:
 - Energy mix
 - Transportation emissions
 - Etc

2. Produce EPDs for each concrete strength (this gives Band E)

** biggest impact in GWP and hence best practises should be used*

*** average values are recommended for simplicity and*

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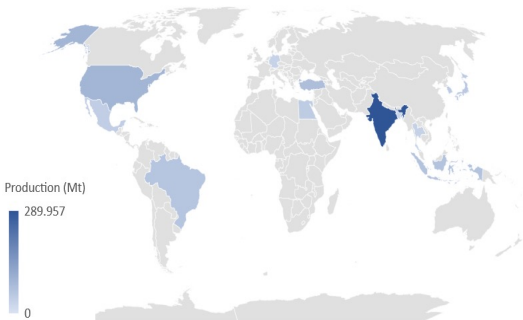
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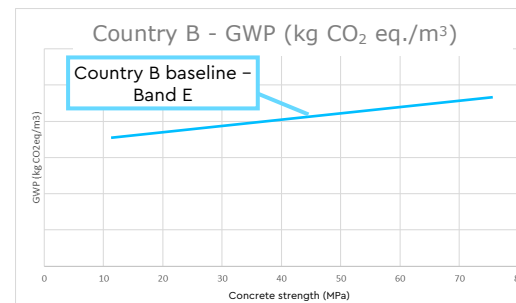
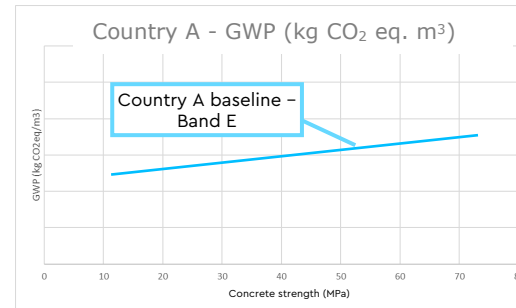
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Normalised country level data



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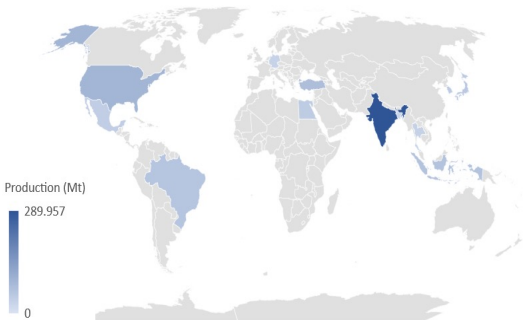
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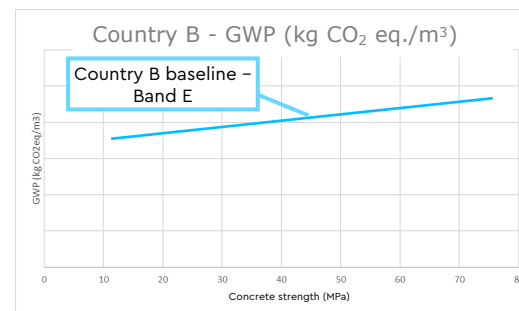
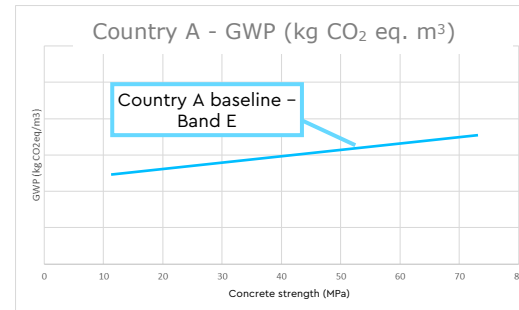
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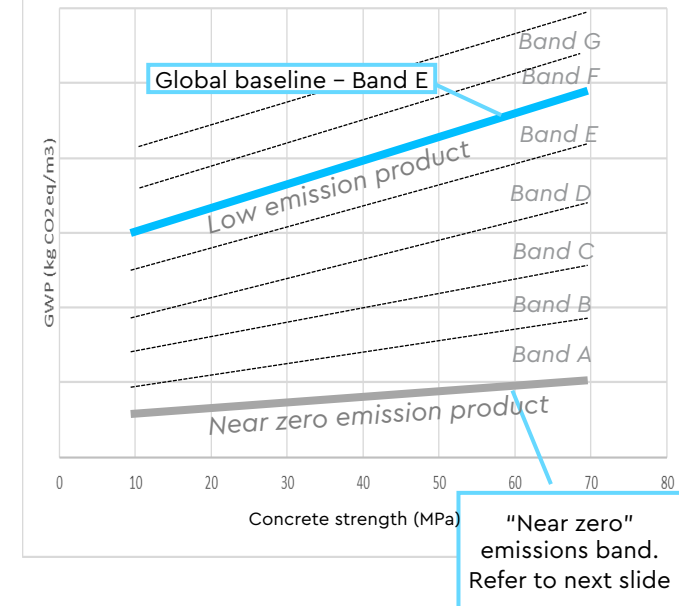
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Normalised country level data

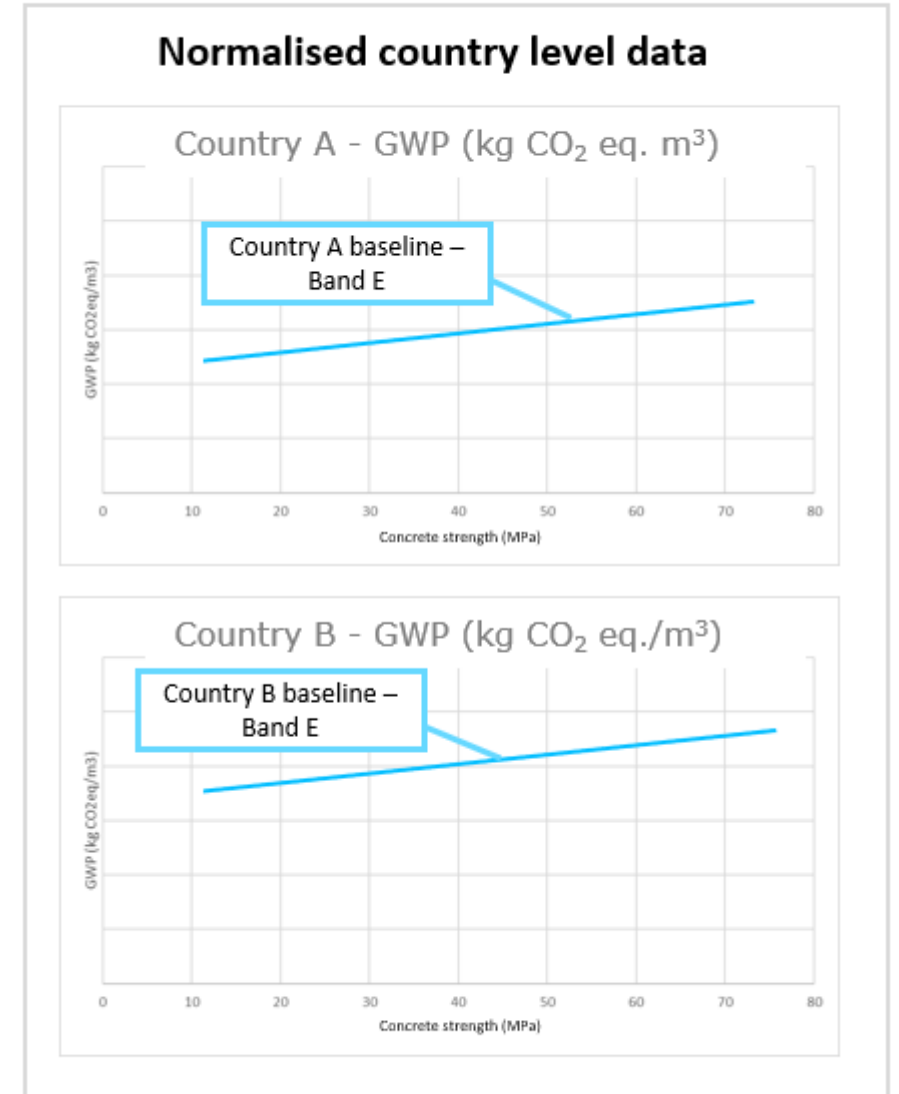


IDDI Global Banding



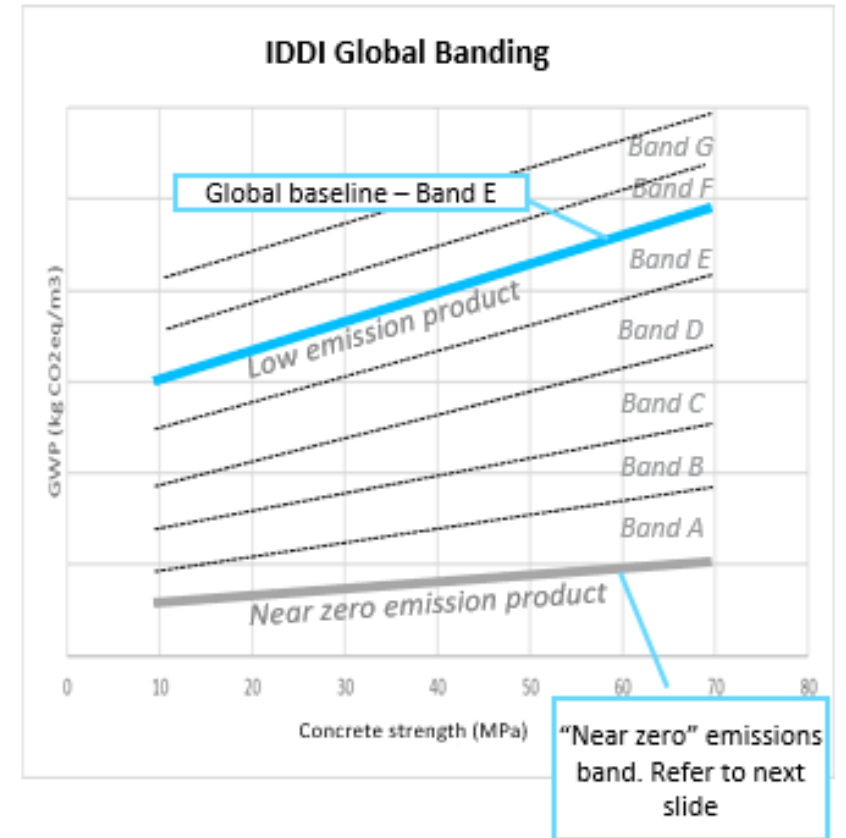
What do we mean by normalisation

- Normalisation is required to account for different PCR standards and practises in each country
- Further studies to determine a methodology on how to take these differences into account in global banding are require



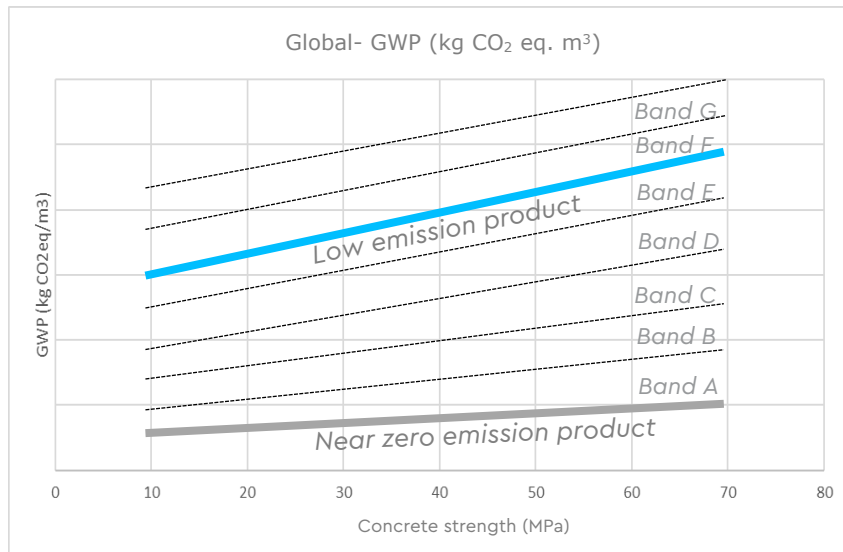
How do we derive the near zero band

- Upper bound of near zero band reflects the 2050 destination
- It is derived using **IDDI/IEA "near zero" cement** and the IDDI PCR harmonisation guidelines, for example:
 - EN 15804
 - EPD International c-PCR
 - EcolInvent database



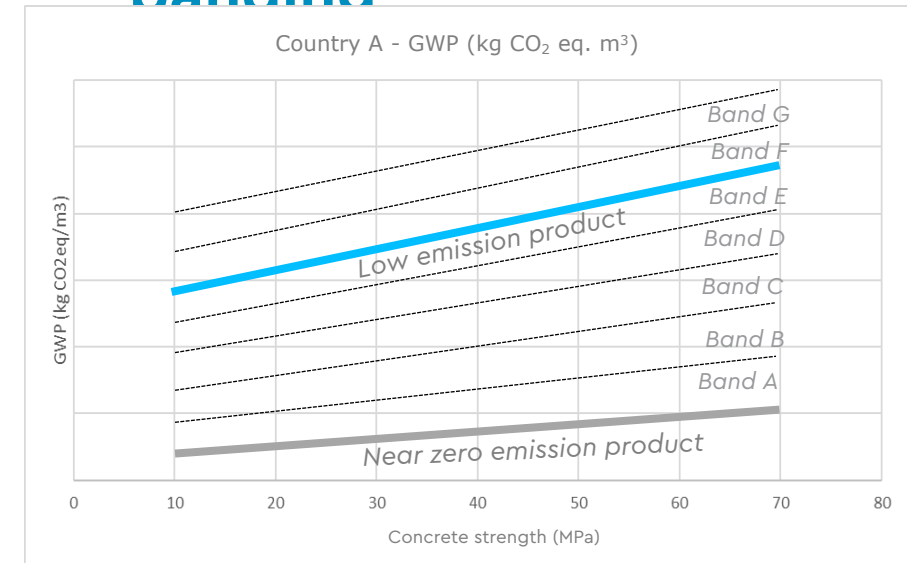
How do we use global banding at country level

Global IDDI banding



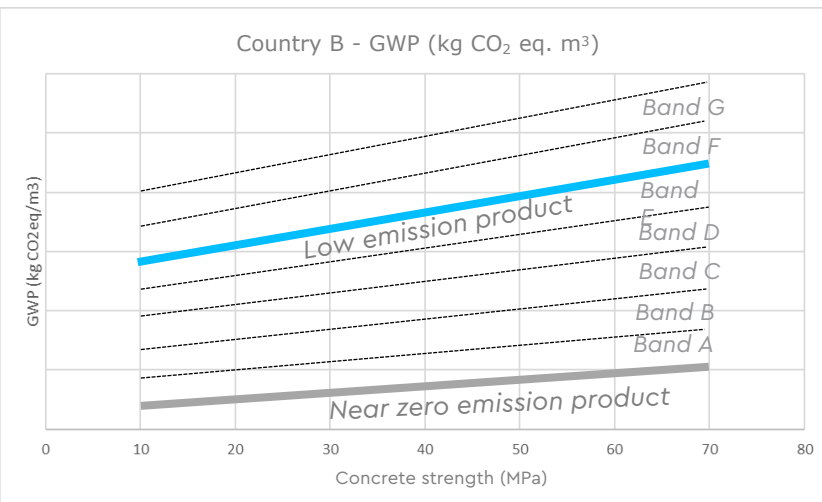
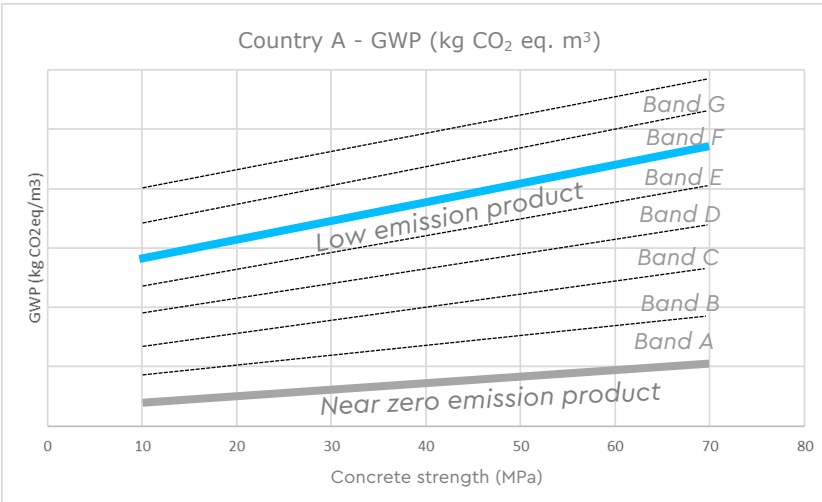
Reverse normalise to consider differences in EPD standards in country

Country A - normalised global banding



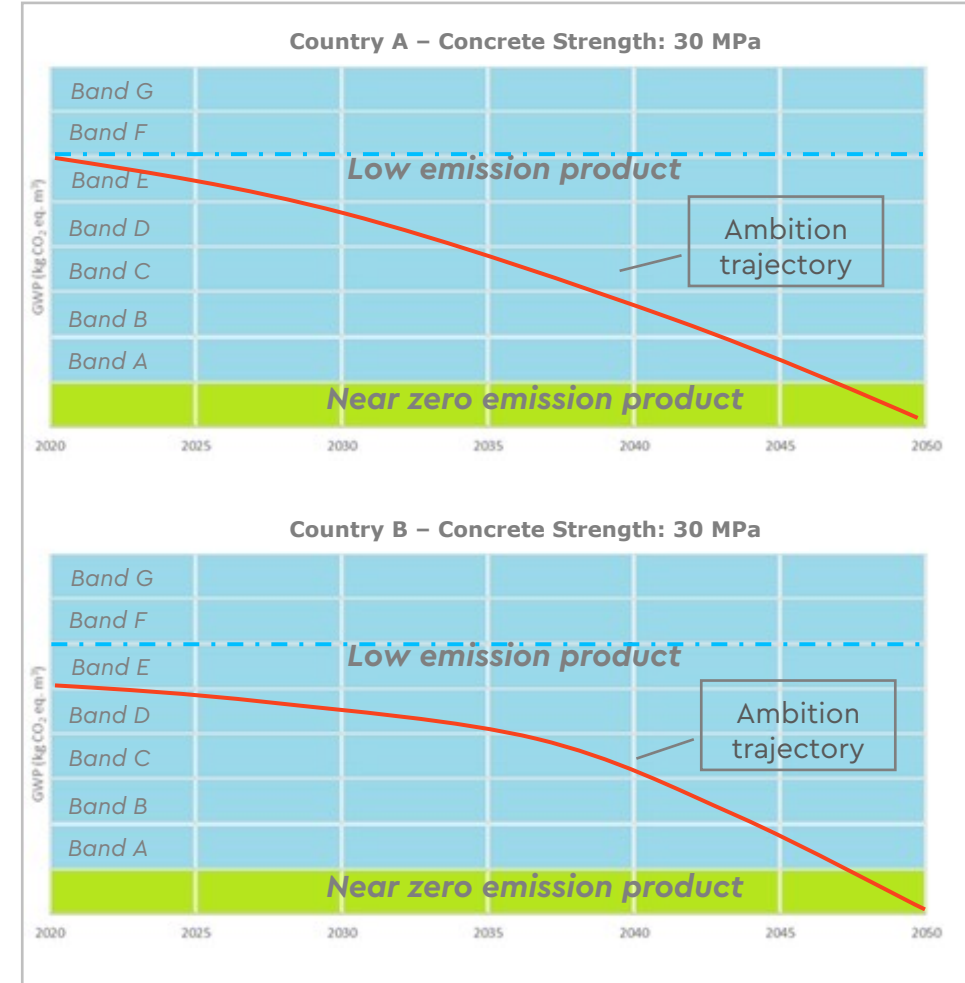
How do we use global banding at country level: Applications

Normalised global banding



Each country can determine trajectories and ambition per concrete strength

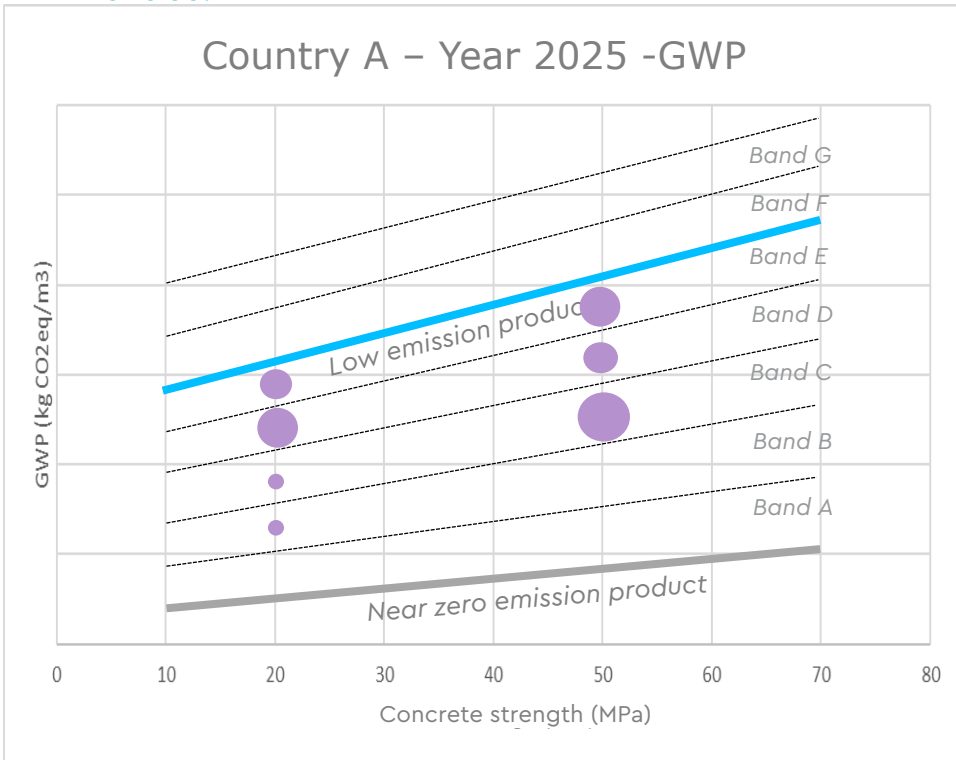
Ambition trajectories to net zero per strength



How do countries report data

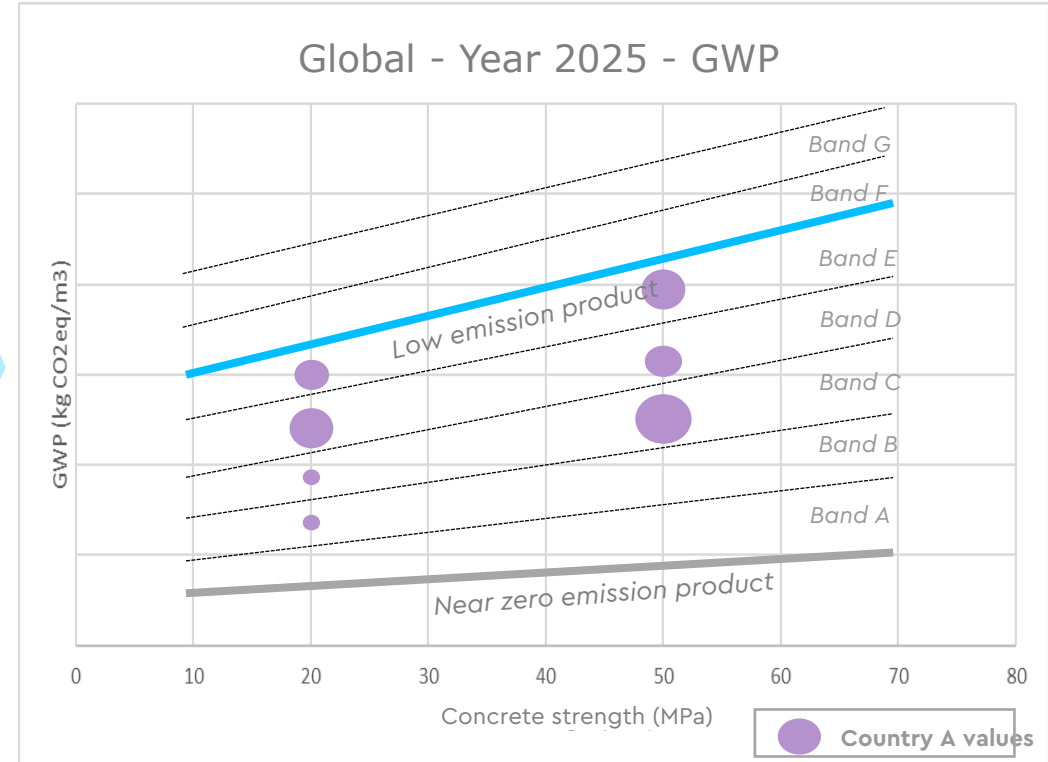
Country data reporting

Country data (% in each band) plotted on country graphs and reported to IDDI. For further details refer to IDDI slides.



Normalise country data to global banding

IDDI processing



CONCRETE FUTURE

Low Carbon and Near Zero Carbon Definitions for Procurement - Webinar

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Concrete and Sustainable Construction Director
Global Cement and Concrete Association (GCCA)

18 July 2023

Members Only