

Federica Pozzi | Program Manager | 09/12/2022

At a glance

Concrete = second most consumend material in world

Cement = source of almost 8% of global CO2 emissions





Emissions factsheet



- Around 95% of carbon footprint of concrete comes from cement.
- Production of 1 ton of cement = 1 ton of CO2
- 3. Cement emissions can be split up in:
 - 33% energy related emissions (heating up of kilns)
 - 67% process related emissions



A very slow decarbonisation trajectory



Verified emissions of ETS covered sectors (ERCST, 2021)



GCCA roadmap





Clinker substitution

- It can be done now and it can be cheap: « Only ready available and scalable solution at near zero costs. Potential for reduction of 40% to 50% » (IPCC, 2022)
- Potential for clinker substitution is the highest in Europe

	https://doi.org/10.1030/341407-022-33203-7
Cement subs materials car emissions by	titution with secondary reduce annual global CO ₂ up to 1.3 gigatons
Received: 24 February 2022	Izhar Hussain Shah © ¹ , Sabbie A. Miller © ² , Daqian Jiang ³ & Rupert J. Myers © ¹ ⊠
Accepted: 12 September 2022	—
Published online: 30 September 2022	Population and development megatrends will drive growth in cement pro- duction, which is already one of the most challenging-to-mitigate sources of CO ₂ emissions. However, availabilities of conventional secondary cementi- tious materials (CMs) like fly ash are declining. Here, we present detailed generation rates of secondary CMs worldwide between 2002 and 2018, showing the potential for 3.5 Gt to be generated in 2018. Maximal substitution of Portland cement clinker with these materials could have avoided up to 1.3 Gt CO ₂ -eq. emissions (-44% of cement production and -2.8% of anthropogenic CO ₂ -eq. emissions) in 2018. We also show that nearly all of the highest cement producing nations can locally generate and use secondary CMs to substitute up to 50% domestic Portland cement clinker, with many countries able to potentially substitute 100% Portland cement clinker. Our results highlight the importance of pursuing regionally optimized CM mix designs and systemic approaches to decarbonizing the global CMs cycle.
Check for updates	



Biggest obstacle for clinker

substitution today?

Prescriptive cement and concrete standards



Cement & concrete standards

- Different cement mixes are possible, standards only cover a part of them (the most carbon intensive)
- 2) Concrete standards are nonharmonized. EU MS can impose additional barriers to cements
- Expanding scope standards in aaprescriptive way = incredibly time consuming





The way forward: 3 key ingredients

Ingredient 1: Performance based standards instead of recipe-based standards

- **Result**: all supplementary cementitious materials (SCMs) can enter cement and concrete mix on condition that they meet required PERFORMANCE
- Is the market ready? YES
 - Rapidly growing expertise on low carbon cements + testing methods
 - ASTM (US) is moving



Standards are important... but

Ingredient 2: an ambitious Construction Products Regulation (CPR) that fosters decarbonisations of materials

- **Pillar 1**: solid information disclosure of all key environmental parameters across the lifecycle of a product
- **Pillar 2**: set ambitious thresholds (cap) on embodied carbon in products, tackling concrete and cement-derived products first.
- Pillar 3: Maximize use of Green Public Procurement



Beyond the standards/CPR..

Ingredient 3: Create a level playing field by moving forward with:

- the **rapid phase out of free allowances** under the EU ETS
- The **adoption of adequate benchmarks** taking into account low carbon cement making as point of reference.



Thank you

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Environmental Coalition on Standards

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