Foundations decarbonization?

Ir Maurice Bottiau
General Manager Franki Foundations
President DFI Europe

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Environmental challenges

Engineers have generally seen themselves as mediators between nature and man. Their task was supposed to make nature exploitable, thus humanizing it to a certain extent, while importing into the human realm principles of productivity present in the natural world

Picon, 2004

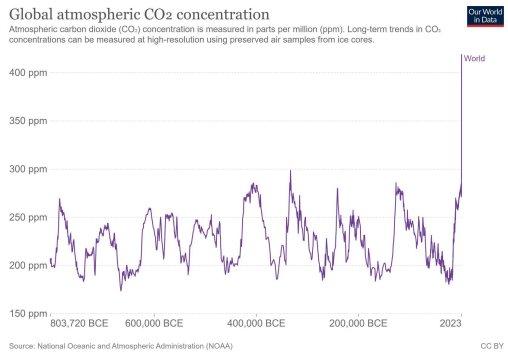
Unfortunately, this has not worked the way we thought !

2

Anthropocene

The Great Acceleration

- Officially, we are still living in the Holocene geological period which started 11 700 years ago
- This has been a period of great stability, which has helped *Homo Sapiens* to expand
- In 2002, Paul Crutzen resurrected the concept of the Anthropocene to denote the current interval of time on Earth in which many key processes are dominated by human influence.
- 7000 years or 70 years ago?



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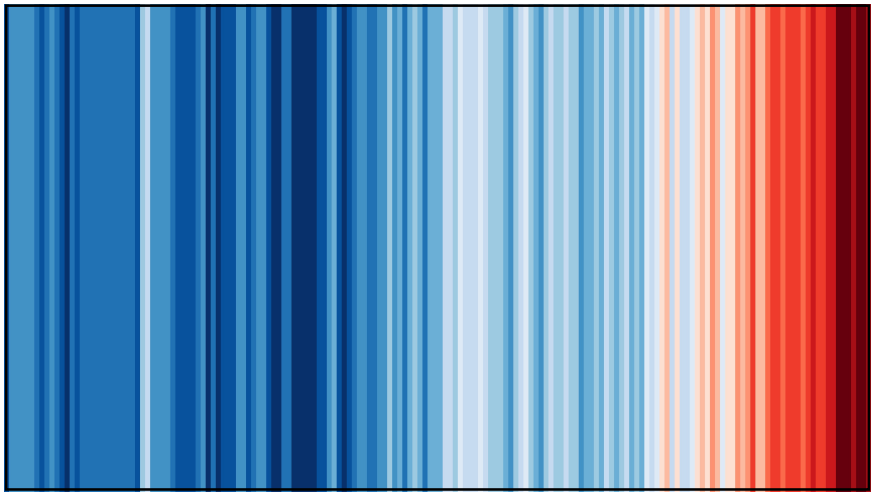

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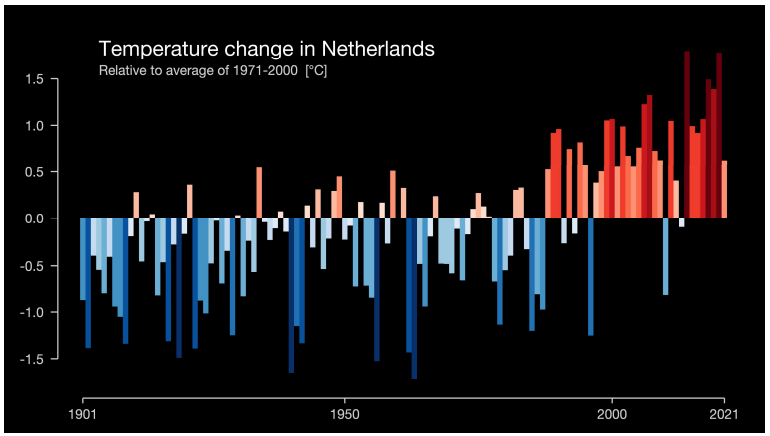

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It's time to wake up!

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United Nations

Sustainable developement goals 2030

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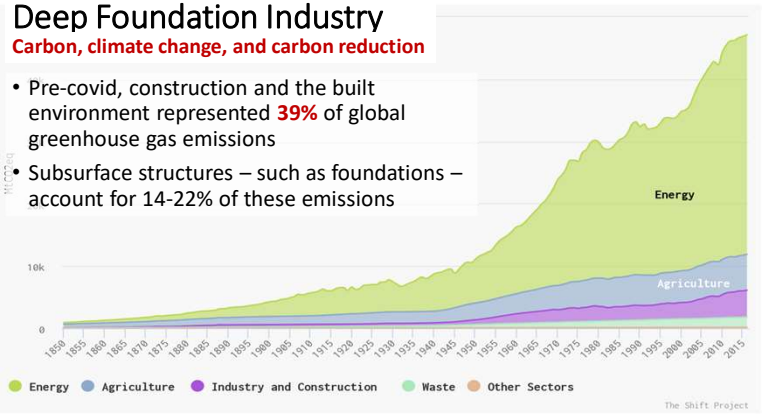
Deep Foundation Industry

Carbon, climate change, and carbon reduction

- Pre-covid, construction and the built environment represented **39%** of global greenhouse gas emissions
- Subsurface structures – such as foundations – account for 14-22% of these emissions



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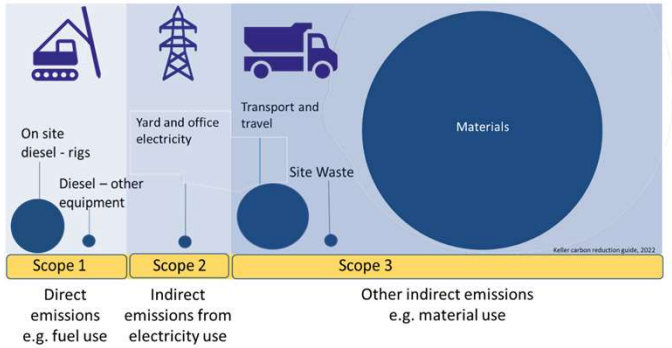

Scope 3 emissions can make up around 80% of geotechnical company emissions for heavy foundations projects

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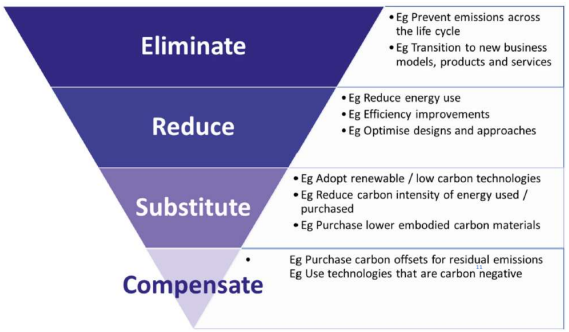
How can we decarbonate?



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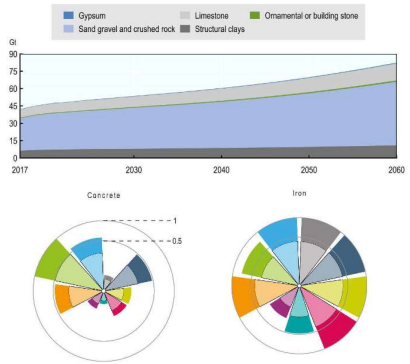
It's not only about CO_2

It's also about material extraction and waste

- The built environment accounts for about 50% of all extracted material
- The construction sector is responsible for over 35% of the EU's total waste generation
- Material extraction is projected to almost double by 2060
- Construction material use is projected to almost double between 2017 and 2060.



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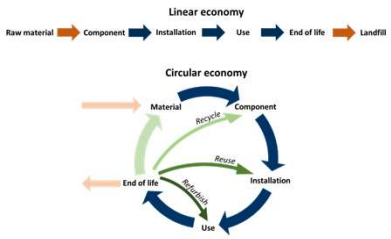
Circularity

Choices will be made in the future with one additional request: reducing CO2 emissions and waste of materials.

- Reusing existing foundations, by re-certification of their performance;
- Development of ground improvement solutions;
- Reducing diameters, lengths, which implies optimizing design efficiency or production systems (e.g. displacement piles instead of bored piles);
- Use lower carbon materials or re-use;
- Develop or encourage new methods of production of materials resulting in low carbon concrete or steel.



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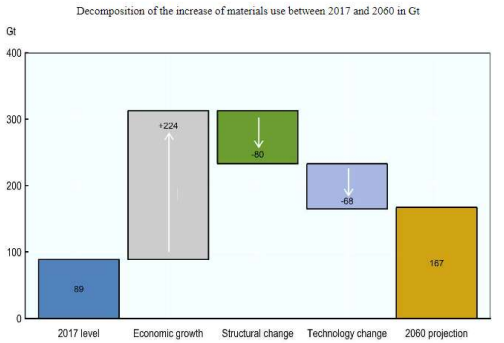
Let us starting sharing how to reach there!



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