SUSTAINABLE CONCRETE FOR SUSTAINABLE BUILDINGS AND CONSTRUCTIONS

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SGS INTRON

WHEN YOU NEED TO BE SURE

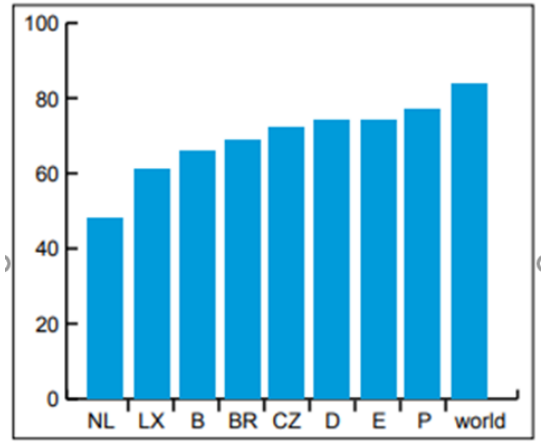
SGS

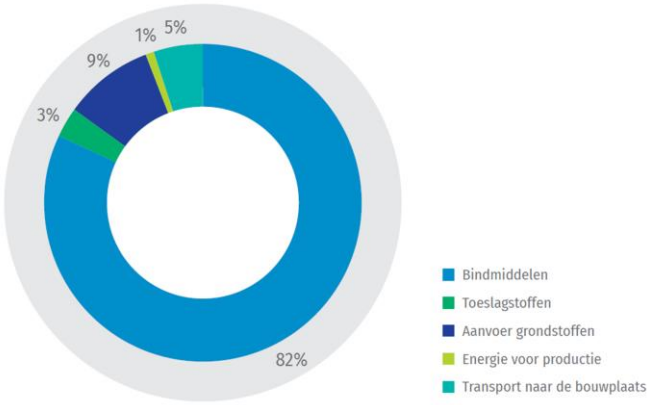
Content presentation

- How sustainable is Dutch concrete?
- Dutch Concrete Agreement (Betonakkoord)
- How to achieve the goals agreed?
- Where are we now?
- Outlook

How sustainable is Dutch concrete?

- Use of cement
  Global (2020): 4800 Mton (of which 50% in China)
  NL (2020): 4.8 Mton for production of 13 Mm^3 of concrete
- Average clinker content of cement
  NL = 49%; Other countries: 60-85%
- CO_2-emission
  NL = 1.2%; Global average = 7% of total CO_2-emission

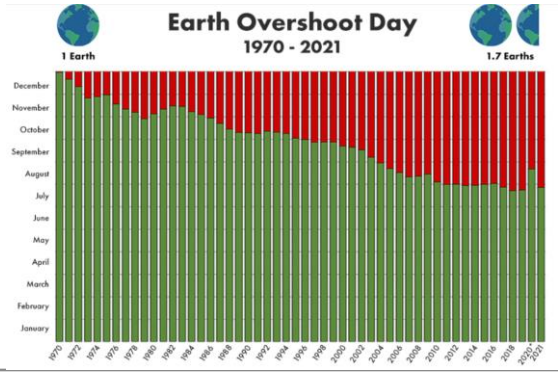




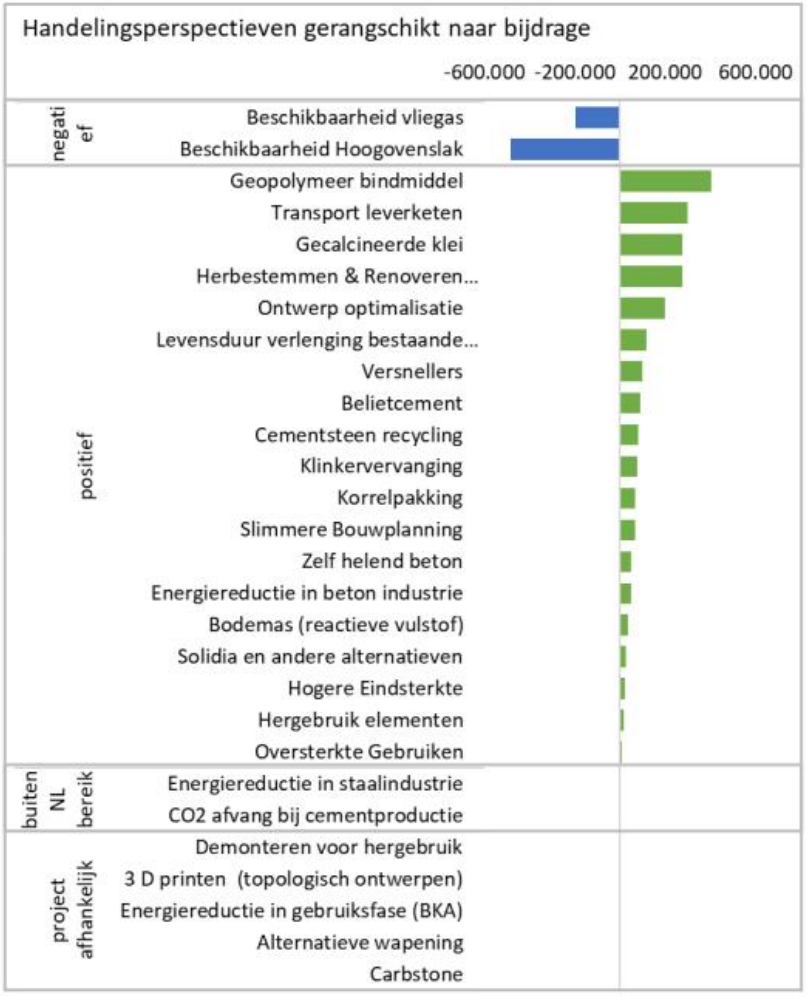
Dutch Concrete Agreement

- Agreement between all parties concerned in 2018
- Goals:
  - CO_2-emission in 2030 (relative to 1990):
    - initially reduction of at least 30% and ambition of 49%
    - in 2022: increased to 55% and 100% respectively
  - Circularity in 2030:
    100% reuse of concrete demolition waste as raw materials for new concrete (closed loop)

BETONAKKOORD

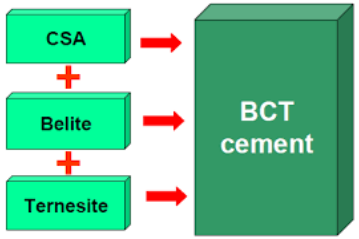


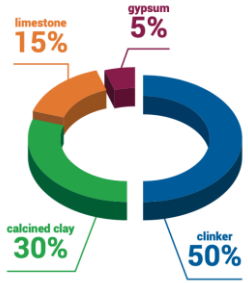
How to achieve the goals agreed?



- Roadmap based on potential options for taking measures (28 ‘handelings-perspectieven’)
- Environmental criteria for sustain-able public procurement (reward sustainable initiatives in contracts)
- Decreasing maximum MKI-value (environmental impact of concrete products) in time (every 2 years)
- Adjust concrete regulations (based on performance not composition)
- Yearly monitoring of CO_2-profile of concrete products

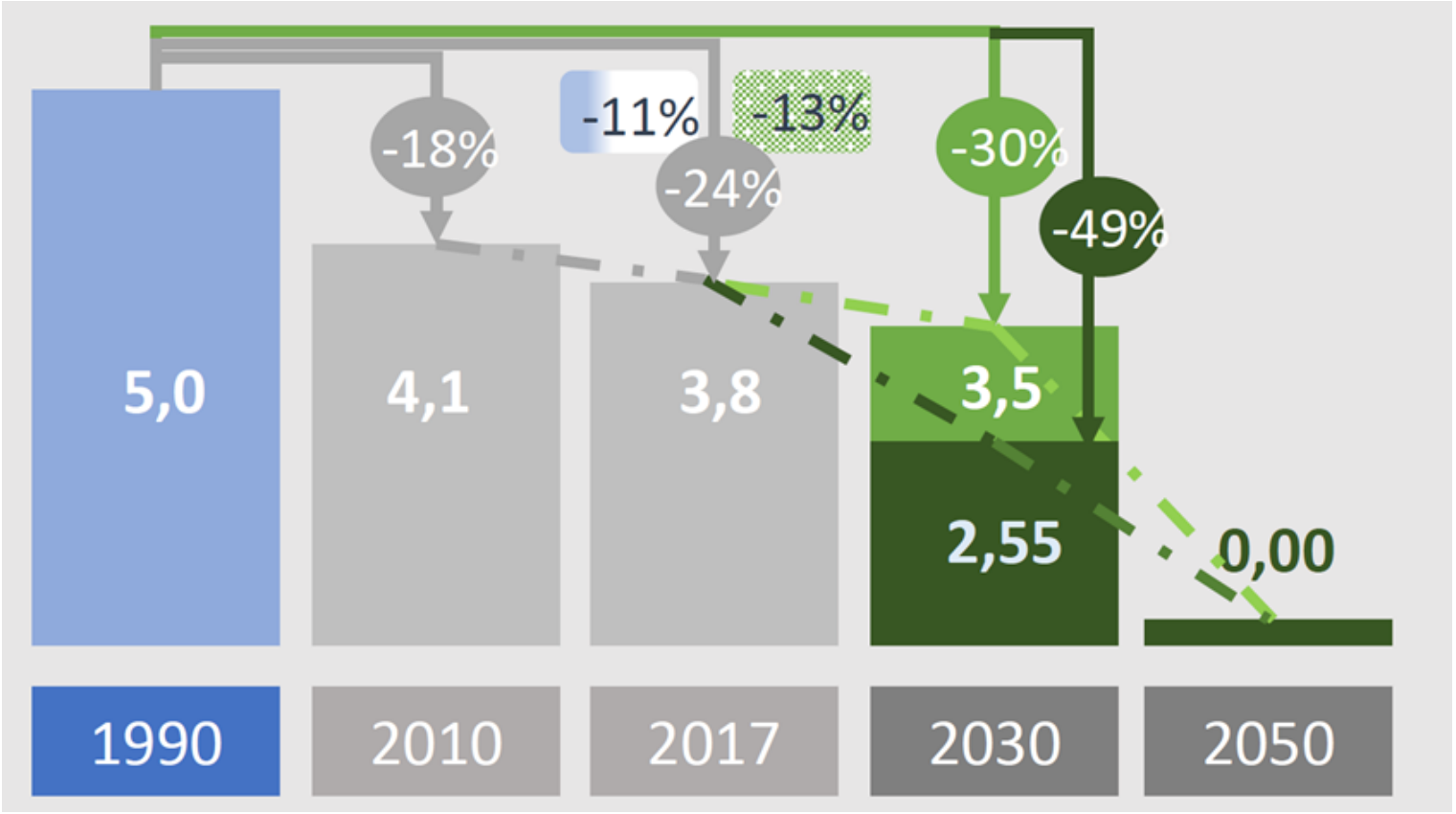
How to achieve the goals agreed?





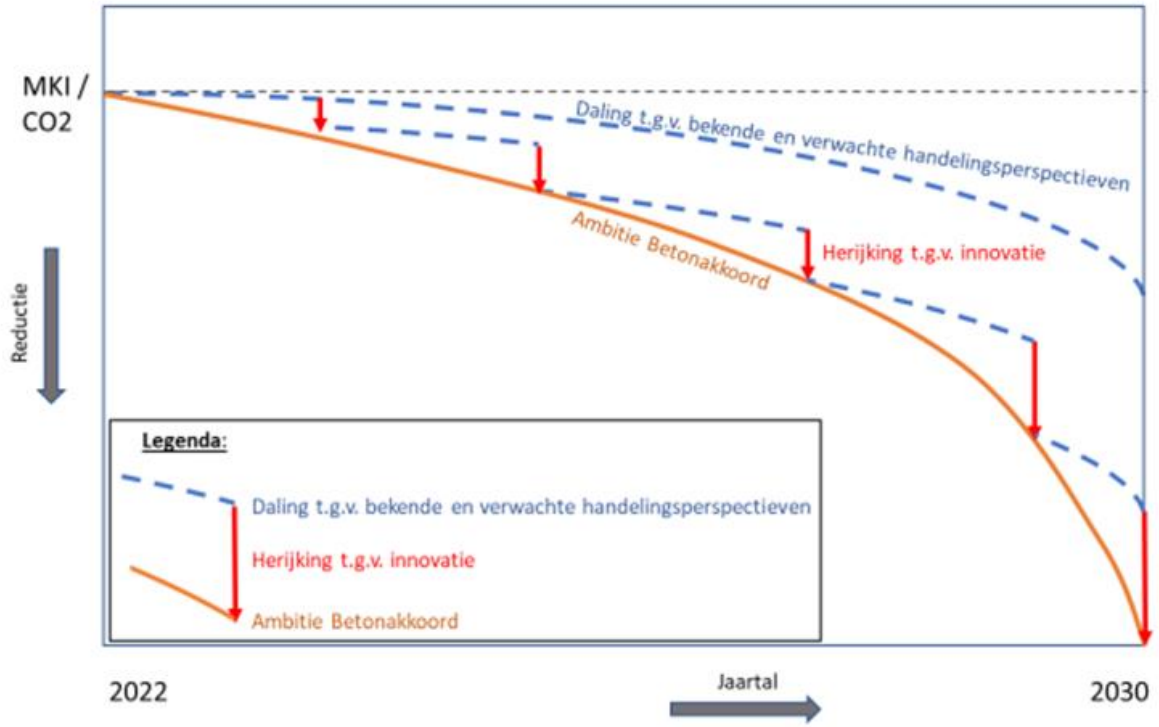
- New cements with lower CO_2-emission (new types of clinker like Ternocem, based on calcinated clay like LC3-50, CEM II cements with less clinker, …)
- Clinker replacing reactive fillers (like ground lava, LD-steel slag, municipal incinerated bottom ash, waste glass, ….)
- Alkali-activated binder (geopolymer, hybrid systems)
- Improved particle size distribution (especially fillers)
- Hardening accelerators
- Performance based mixture design
- Sustainable energy sources for transport and production
- Use of secondary aggregates and fillers (recycled concrete)
- Reuse of concrete buildings and elements (e.g. beams)

Where are we now?



Outlook

- 49% reduction in 2030 will most likely be achieved using present developments
- To reach 100% reduction we need new innovations



Thank you four your attention!!

Any questions?