

## SHORT SUMMARY

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**Product & sector:** concrete, locks and flood defences (Infra) | **Country:** The Netherlands



# Circular concrete chain and multi-hydraulic engineering



*The government can make a huge difference because of the large volumes of concrete.*

How can we make the concrete chain circular? For example when replacing approximately fifty locks and flood defences. Rijkswaterstaat and three big municipalities considered this in this project.

## Project description

In this project Rijkswaterstaat and three large municipalities investigated the level to which they can include raw material efficiency in public tenders for infra projects. The project comprised two pilots. The first was the Rijkswaterstaat 'multi-hydraulic engineering project'. In this, Rijkswaterstaat examined the added value of raw material efficiency in replacing fifty locks and flood defences between 2020 and 2040. In the second pilot, the three bigger municipalities, Rotterdam, Utrecht and Amsterdam, developed a joint strategy for raw material-efficient procurement for infra projects. This did not only focus on the possibilities of reuse, but also on new technology and innovative applications.

## Approach

This project arose from the Green Deal on Concrete. A working group was established with the aim of making the concrete chain circular. Workshops were organised for this. In the workshop for the Rijkswaterstaat multi-hydraulic engineering project, the focus mainly lay on non-technical aspects, such as organisational innovations. This included new business models, chain management and raw material passports. In the workshop with the three municipalities, preconditions were mapped out for a design for a circular procurement process for infra.



## FACTS & FIGURES

- > **Multi-hydraulic engineering project Rijkswaterstaat:** replacement of fifty locks and flood defences
- > **Contract:** € 2-4 billion
- > **Potential savings of a lock:** 36% CO<sub>2</sub> and 21% materials
- > **Examples of calculation methods:** LCA, EPD, CO<sub>2</sub> footprint and [DuboCalc method](#)

## Results

The workshop with the three municipalities resulted in valuable insights regarding procurement objectives; assessment criteria; the assessment of tenders; and the burden of proof and monitoring. The workshop also contributed to a process from the Municipality of Rotterdam to have the concrete industry innovate with a life cycle analysis (LCA). This is a method to determine the total environmental impact of a product during its entire life cycle. This means: from extracting the required raw materials, production, transport, use and waste processing.

*“The cycle period is a crucial element of business models.”*

Evert Schut, Rijkswaterstaat Adviser

The workshop about multi-hydraulic engineering projects, examined the added value of the efficient raw material use in replacing locks. How can Rijkswaterstaat take responsibility for the entire life cycle, including the

demolition phase? Participants underlined the importance of a reliable method to calculate the EPD/CO<sub>2</sub> footprint. EPD stands for Environmental Product Declarations, the European directives for environmental performance of products in the construction sector.

## Lessons learned

- Formulate the reduction of the environmental impact as a main objective for the procurement. The government can make a huge difference because of the large volumes of concrete.
- Regarding evidence (measurability) and monitoring, it is recommended to focus on raw material passports.
- With a cycle period of fifty to sometimes a hundred years, it is expected that a lease-type arrangement will not be usable for construction.
- Uniform European roll-out is difficult: the European regulations differ significantly.
- In both pilots it was observed that the market needs stronger environmental and financial incentives to keep innovating. The amount of primary raw materials used, should be a benchmark for circularity and not the amount of

waste products that you produce.

## About REBus and the Green Deal on Circular Procurement

The Green Deal on Circular Procurement (GDGP) is an initiative of MVO Nederland (CSR Netherlands), NEVI, Central government, Duurzame Leverancier, PIANOo, Kirkman Company and Circle Economy. Various pilots originating from GDGP are partly financed by the European REBus project, implemented in the Netherlands by Rijkswaterstaat (Directorate-General for Public Works and Water Management). They are working together to support businesses and government organisations in their circular procurement ambitions.

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**Relevant links & documents:** [Publication CE Delft: Exploring the circular economy in the concrete sector](#) | [REBus Case Study](#)

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