



## DELIVERABLE

# Web-based digital version of The Circular Material Depeche

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## PURPOSE

The overall aim of the Circular Material Depeche Action is to support small and medium-sized enterprises (SMEs), more specifically contractors, craftsmen, and technical consultants in the construction industry, with their circular transition. This entails recognizing materials and components in existing buildings relevant for reuse, as well as recognizing possibilities of using second-hand materials as input in renovation works – making it easier to allocate materials from one project to the next.

The focus for this deliverable specifically has been to **lower the entry barriers for the SMEs in the industry making it easier to adopt a circular practice by developing a digital tool that accommodates and simplifies the circular process**. In order to do so, it was crucial to first identify and clarify certain aspects, outlined by the activities carried out in work package (WP) 2, 3, and 4.

How does this deliverable correlate with the WP activities:

### WP2

- Workshops with relevant stakeholders in the field were held, involving both practitioners and experts, to identify relevant materials for reuse – 15-20 were selected. Challenges and possibilities regarding the reuse of these materials were outlined and discussed.
- An expert background paper was developed describing the challenges relevant for the SME segment in relation to the identified materials.
- Based on input from workshops with externals, webinars hosted with an additional replicator group, and internal workshops between BRK and KK, a concept for the digital tool was developed along with a visualized mock-up (DELIVERABLE: Specification of concept of The Circular Materials Depeche).

### WP3

- One of the key takeaways from the WP2 activities was that in order to develop a meaningful digitalized version of the Material Depeche, it was necessary to differentiate between the building process for demolition cases and renovation cases respectively since the steps necessary to accommodate a circular transition varies for each.
- **Results (further specified in Results section):** Thus, for the demolition cases, a digital tool was developed in the form of an interactive excel sheet that can act as a simple material passport for a given material as well as calculate the potential CO2 savings from reusing it. By including all relevant information about the material, it eases the transfer from the previous owner to the next. For the renovation cases, see WP4.
- Simultaneously, thorough examinations and interviews with already existing physical and digital storage platforms were carried out to develop the concept for BRK's physical material storage facility on the island of Bornholm, the outcome of which is included in the final project report.

## WP4

- **Results (further specified in Results section):** For the renovation cases, a digital tool, also in the form of an interactive excel sheet, was incorporated into KK's organizational processes in order to test it in the market and assess the impact of digital tools in initiating change and easing the adoption of circular practices in the SME segment. As such, test-users were identified, and the tool was used by a varied group of technical advisors who work specifically with renovations.
- The tools were made publicly available by making them web-based and accessible through KK's website, among others.

## RESULTS

As presented above, this deliverable consists of two parts:

- 1) A web-based digital tool developed in this project specifically for contractors dealing with demolition cases, tested by BRK and their collaborating contractors.  
Name of tool: BRK Datablad
- 2) Another web-based digital tool, originally developed for technical advisors, contractors and other relevant SMEs working with building renovations, tested in this project with the aim of assessing the impact of the tool in easing adoption of circular practices within this segment.  
Name of tool: CØ2 Beregner

### BRK Datablad

Below is a screenshot example of the BRK Datablad and its functionality. This is an excerpt. You insert the material in question along with the relevant details specified by the sheet, such as dimensions, volume, and quality, and the tool calculates the estimated kg CO2e.

BORNHOLMS REGIONSKOMMUNES NEDRIVNINGSPULJE DOKUMENTATION FOR GENBRUG ELLER GENANVENDELSE AF BYGGMATERIALER	
Materialets ID-Nummer *:	9.1.5.
	
Bygherren skal levere et foto af den nedtagede fraktion.	
<b>Info om materiale (udfyldes af BRK)</b>	
Materiale	Uimprægneret træ
Beskrivelse	
Dimensioner	1.000m (længde) x 0.25m (højde) x 0.25m (bredde)
Mængde	1000 lbm
Kvalitetsparametre (stand, farve, sildtage, andet)	God kvalitet. Med søm.
Andre teknisk parametre	34.375 tons
CO <sub>2</sub> **	1762.5 Kg CO2-ækv.
Miljø	Der ikke er konstateret en risiko for miljøproblematiske stoffer
Anvendelsesmuligheder	Anvendes til fremstilling af ikke bærende træelementer såsom beklædning eller møbler.

As such, in the simplest way possible, important details about the given material is documented and can be delivered to a new owner/buyer. The volumes are typically small in the demolition cases on Bornholm, and it was therefore essential to make the tool very simple and easily accessible as the new owner is likely not going to be a big organization with vast resources but a small company (or even a private individual) – who nonetheless need to know what they're dealing with.

The tool can be accessed here: [BRK Datablad – Dokumentation for genbrug eller genanvendelse af byggematerialer](#)

## CØ2 Beregner

The CØ2 Beregner is a material screening tool developed to calculate potential CO2 savings as well as give recommendations for circularity based on details about a given material. As such, with information readily available, technical advisors and others can quickly get a grasp of whether the material is suited for reuse or recycling or not at all. This can assist the initial phases of a building renovation process in which the project is being scoped before more technical assessments and tests (that are also costly) are carried out. Additionally, it pressures the advisor or consultant scoping the project to consider reuse in the first place – even if this was not on their radar initially.

Below is a screenshotted example (excerpt) of the tool:

Materiale	Beskrivelse	Mængde	Årstal	Tekniske specifikationer		Note
Mursten	Hvordan vil du beskrive materialet? (Placering, stand, forekomst etc.)	Hvor mange m2?	Hvornår er murstene lagt?	Er murstene pudset?	Hvilken type mørte er anvendt?	Hvis typen af mørte ikke kendes, kan det antages at muren fra 1960 og derefter er lagt med cementmørte.
	Angiv kort beskrivelse	Indtast m2	Angiv årstal (AAAA)	Anvend scroll-down menu	Anvend scroll-down menu	
	God	200	1900	Nej	Kalk	Udførelse af krasdestest med ex. kniv kan også være en måde at determinere det på - "et" af udskudse = stort samsynlighed for klok mørte "Svær / umulig" stort samsynlighed cement

Materiale	Beskrivelse	Input mængde	Forudsætning(er) for at materialet kan cirkuleres	Greb til cirkulering	Beskrivelse af greb	Potentiel CO2 besparelse for givne cirkuleringsgreb	Baggrund for potentiel CO2 besparelse	Indlejet CO2
Enhed		m2				%		kgCO2eq
Mursten	God	200	Mursten med kalkmørtel kan skilles ad og renses, og dermed genbruges direkte.	Genbrug	Mursten renses og genbruges direkte i ny facade (eller som belægning).	76-80	Når nyt murværk bygges af gamle mursten modregnes transport, rens og ny kalkmørtel, hvorfor den samlede CO2-besparelse lader på knap 80%.	6953

The key takeaways from the test phase of the project, including concrete feedback from the users as well as the perspectives for future implementation, have been laid out in the final project report.

The tool can be accessed here: [CØ2 Beregner – digitalt værktøj til materialescreening](#)