Interreg South Baltic

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Future Baltic Bauhaus

No time to WASTE
How to plan circular?

a workshop by FutureBalticBauhaus

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Hochschule Wismar – University of Applied Sciences
Technology, Business and Design

What is needed? - Strategies

HOW?

Cradle to Cradle

Imperfect

Circular Economy

Material Banks

Recycling

Reusing

Urban Mining

Regulations

R Strategies

Building Resource Passport

Cradle to Cradle

New mindset

Life Cycle

Environmental Product Declaration (EPD)

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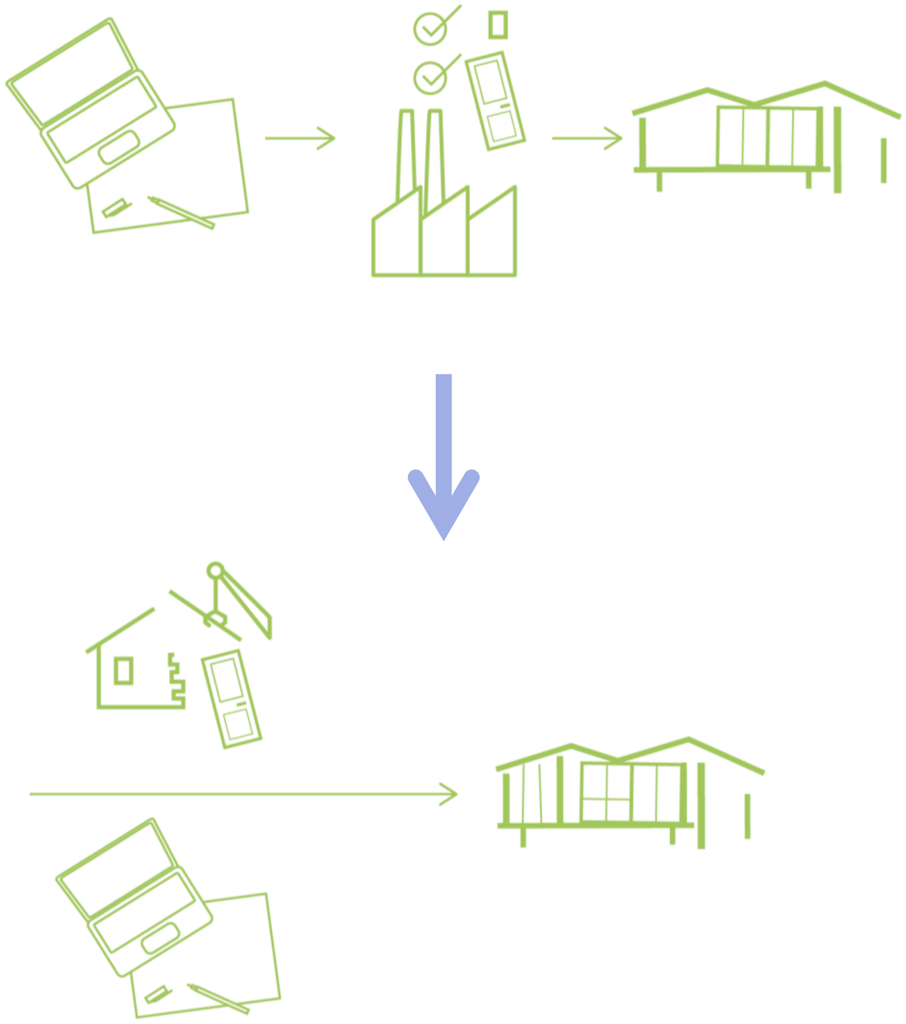
change in mindset, process and outcome!




used material platforms
buildings to be demolished

APPROACH TOWARDS CIRCULAR PLANNING

yayy!

NEW PROJECT

First steps:
- talk openly with client & set goals together
- elaborate potential of saving CO_2 emissions and resources

Site analysis

Are there existing buildings on-site?

yes

Can it be kept and restored?
- new function?

yes

Excellent!
- Analyse the existing building (structure, options for use, hazardous substances, existing plans)
- Building regulations & heritage: what are my options?
- Start planning!

no

not even partly?

yes

no

Analyse which materials & elements can be reused
for the project on-site or in other projects
Make sure the demolition method enables reusing or recycling the materials & components

no

Will there also be a new building (part)?

yes

For the new structure:
Materials:
- use circular (reused, upcycled, cradle2cradle, recycled,...) materials & components
- where that isn't possible, use renewable materials
- use healthy, pure and good quality materials to enable more cycles

Design:
- build what is necessary: resource use only where needed
- design for disassembly: enable future circularity
- flexibility: enable changes in use in the future - lengthen the life of the building

no

Evaluate:
- use the chance and display the impact of your project!
- there are simple LCA tools which can be used for this
- learn: what worked well and what could be done better in the next project?

Before:
- get to know your market
research (& test) platforms to locate materials
- training
there are many (free) webinars & learning content available on circular planing - use it!
- tools
search and test digital tools
- best practice examples
learn from other offices' experience and get inspired!
- know your regulations
question them & find "loopholes"

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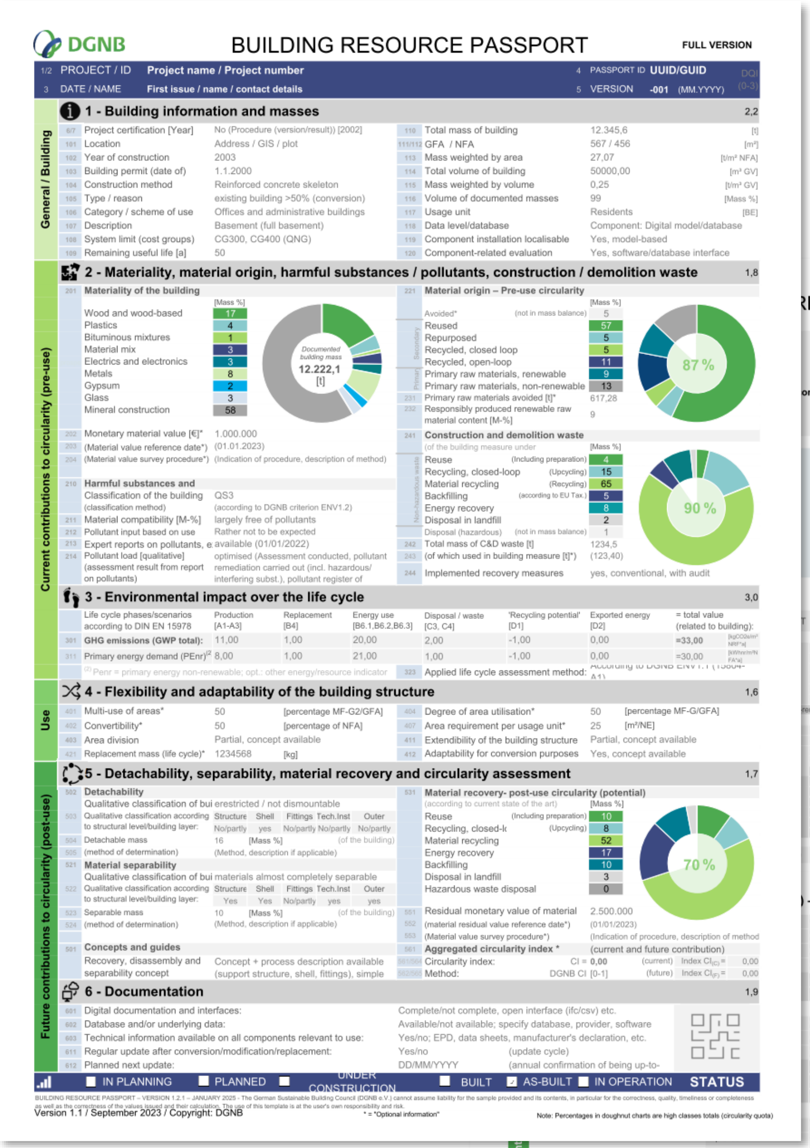
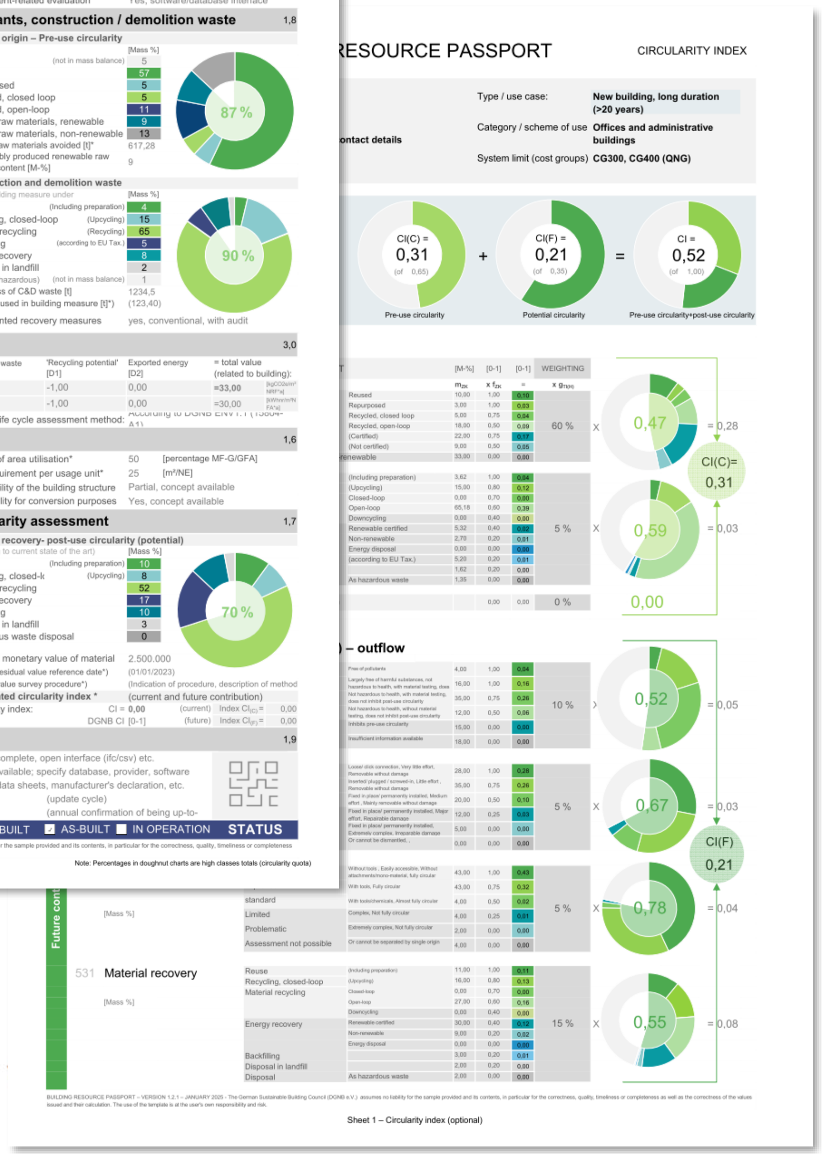
DGNB Building Resource Passport

Based on the following property categories:

- Circularity potential of unbuilt building materials and elements
- Demolition potential of building materials and elements
- Material compatibility of adjacent components and layers





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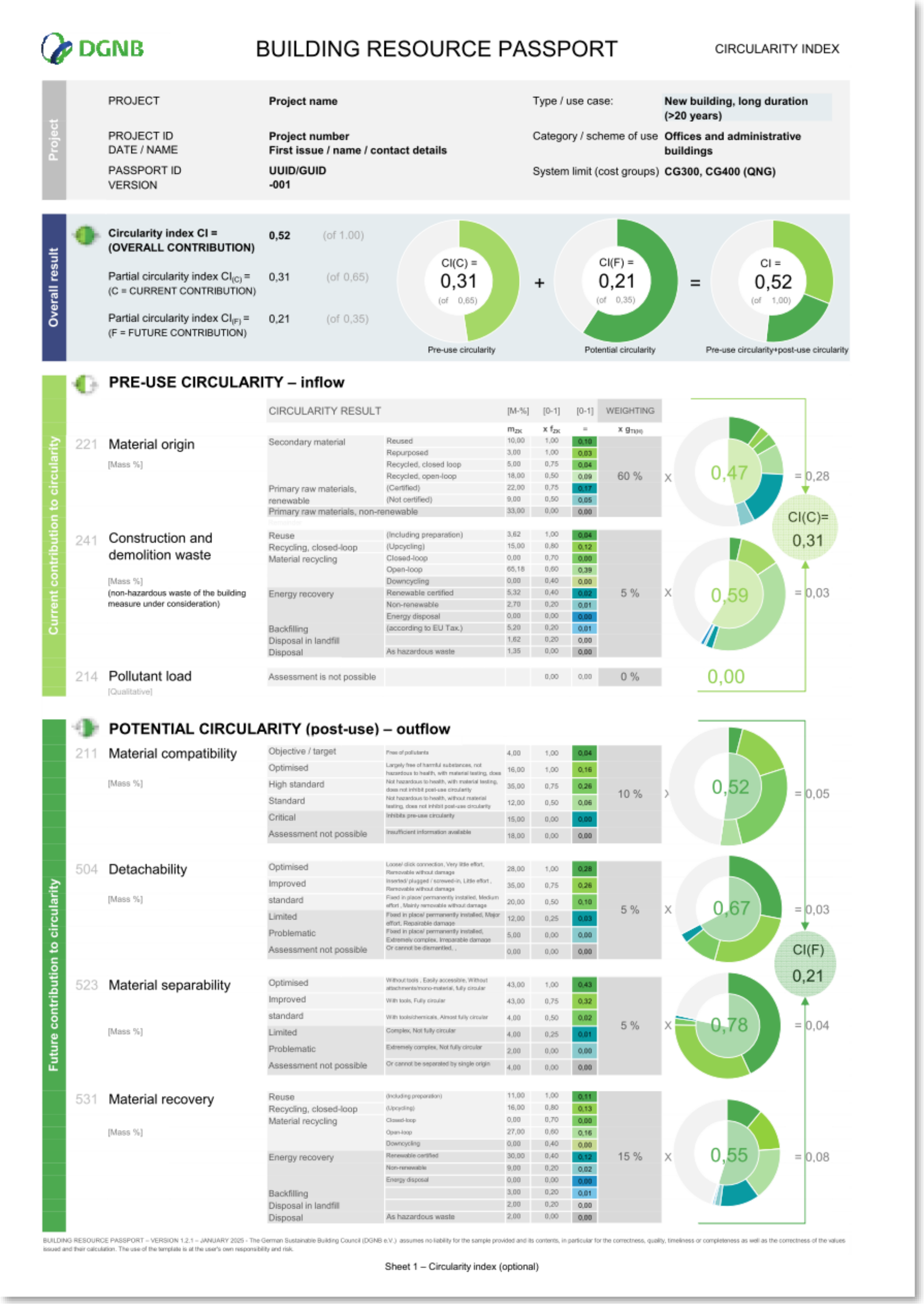
Circularity index

For the circularity potential, end-of-life categories are defined from A+++ to D.

These describe whether and how the materials and components can be used at the end of the building's life.

Important factors: separability and purity of materials in the demolition process.



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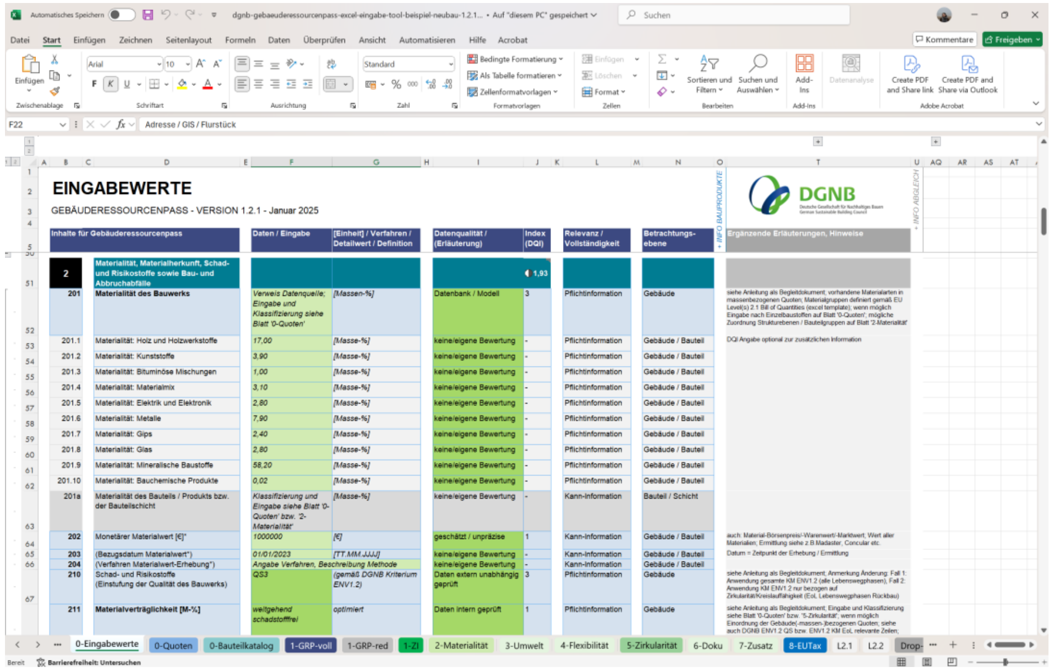
DGNB Building Resource Passport

Available as a free tool on the DGNB website:

www.dgnb.de/de/nachhaltiges-bauen/zirkulaeres-bauen/gebaeuderessourcenpass



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Time for an architecture competition!

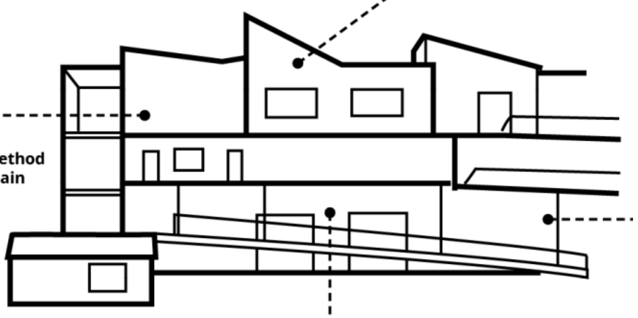
Research station

As a part of a building cluster
Location: Rügen
Floor area: 500 m²
Floors: 3
Building Class: 3

Name:

DECISION B:
Which materials/ components are you using for the facade?

DECISION A:
What material and method do you plan for the main structure?



DECISION C:
How would you ensure future short & long term changes in use can be made, like the work-method?
Would you plan in separate zones regarding the use?

What makes your building STAND OUT? What is innovative about your design?

EVALUATION GRID

	1 = low	3 = moderate	5 = high	possible challenges
circularity potential	materials are mostly not circular, no reuse concept	some circular, reused materials, partial design for disassembly/ second life	most materials reused and/or bio-based, disassembly/ second life concept	
flexibility	fixed design, not much change possible other than furnishing	a few changes possible - example: a few walls/ materials could be changed	change of use possible, structure and ceiling height enable changes	
innovation/ impact	conventional	some innovative ideas for more sustainability and circularity	new ideas and methods for sustainability and circularity, example for others	

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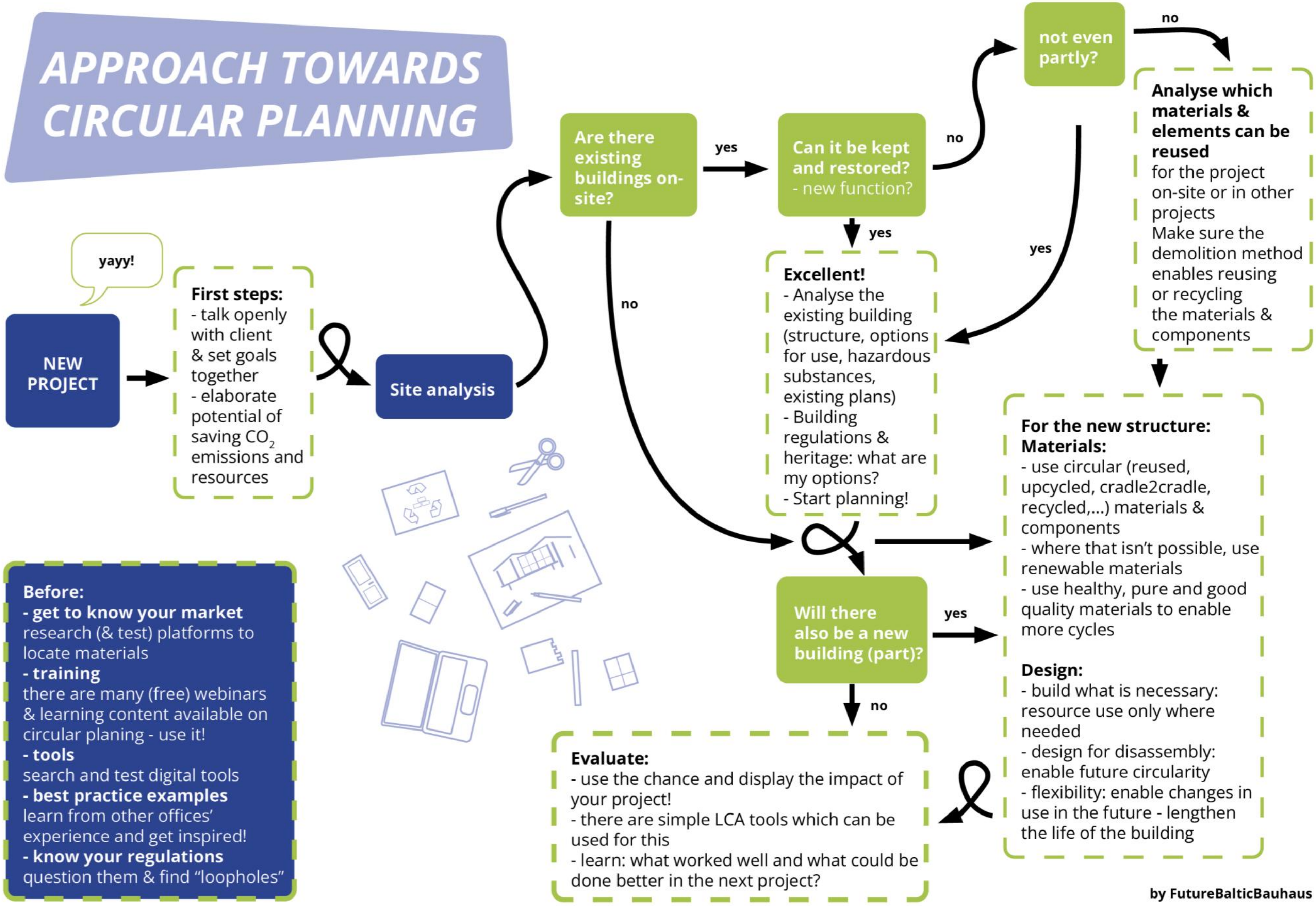
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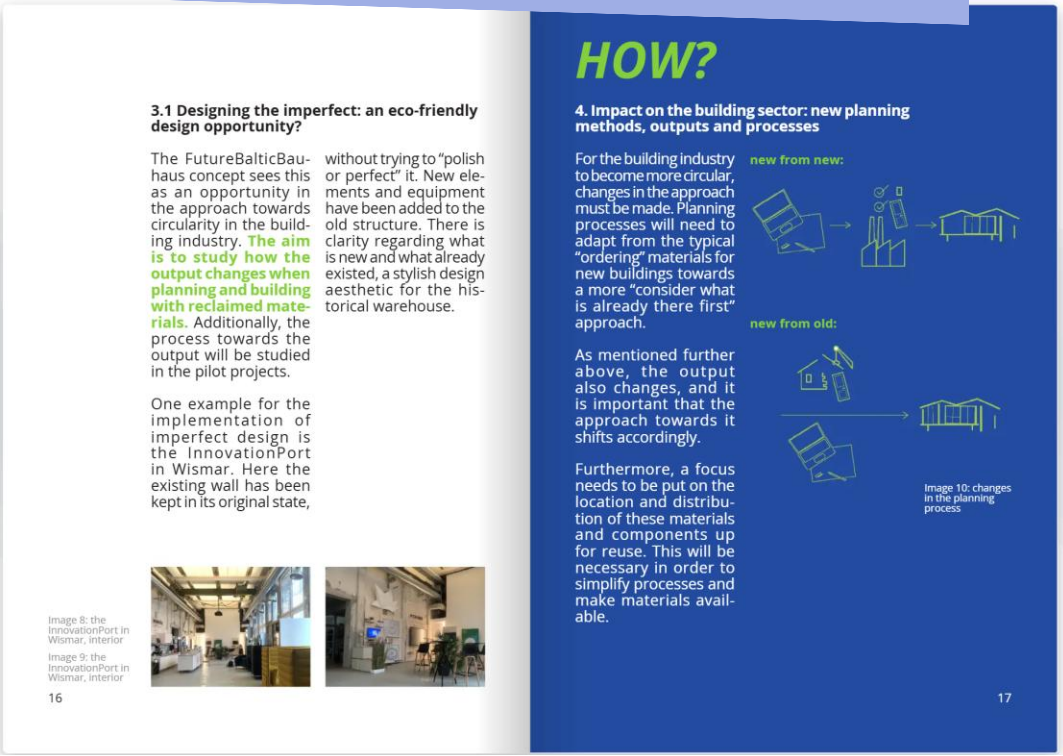
Booklet: Principles guiding the FutureBalticBauhaus



3.1 Designing the imperfect: an eco-friendly design opportunity?

The FutureBalticBauhaus concept sees this as an opportunity in the approach towards circularity in the building industry. **The aim is to study how the output changes when planning and building with reclaimed materials.** Additionally, the process towards the output will be studied in the pilot projects.

One example for the implementation of imperfect design is the InnovationPort in Wismar. Here the existing wall has been kept in its original state, without trying to "polish or perfect" it. New elements and equipment have been added to the old structure. There is clarity regarding what is new and what already existed, a stylish design aesthetic for the historical warehouse.

Image 8: the InnovationPort in Wismar, interior

Image 9: the InnovationPort in Wismar, interior

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HOW?

4. Impact on the building sector: new planning methods, outputs and processes

For the building industry to become more circular, changes in the approach must be made. Planning processes will need to adapt from the typical "ordering" materials for new buildings towards a more "consider what is already there first" approach.

As mentioned further above, the output also changes, and it is important that the approach towards it shifts accordingly.

Furthermore, a focus needs to be put on the location and distribution of these materials and components up for reuse. This will be necessary in order to simplify processes and make materials available.

new from new:

new from old:

Image 10: changes in the planning process

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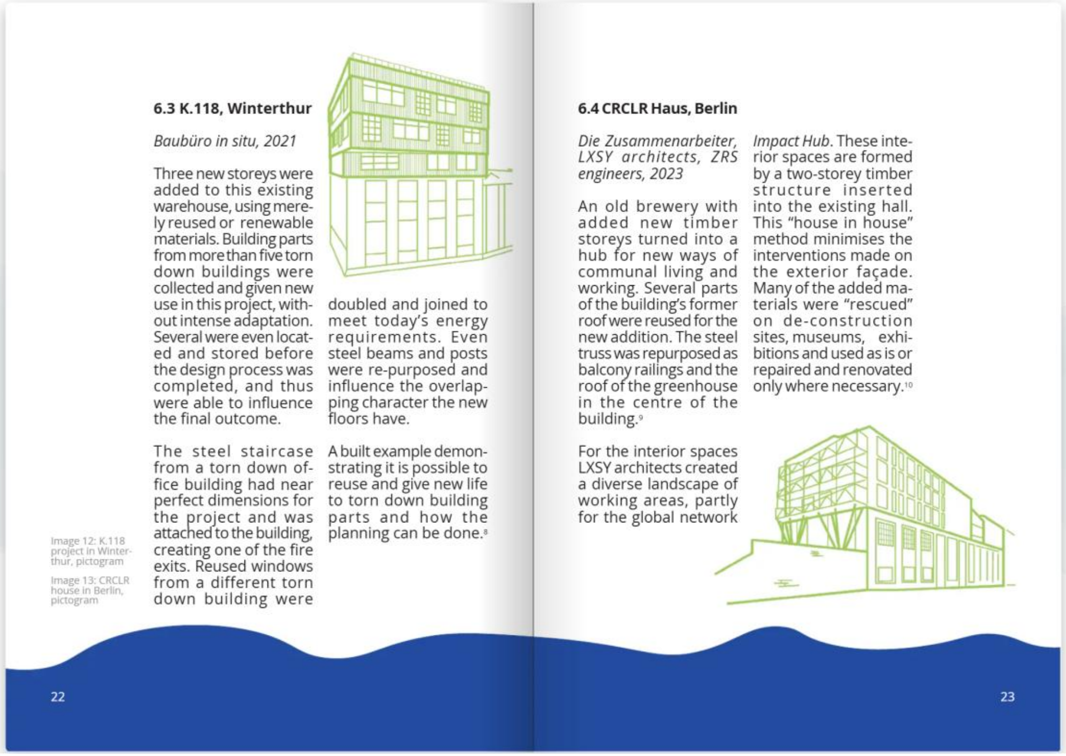

6.3 K.118, Winterthur

Baubüro in situ, 2021

Three new storeys were added to this existing warehouse, using merely reused or renewable materials. Building parts from more than five torn down buildings were collected and given new use in this project, without intense adaptation. Several were even located and stored before the design process was completed, and thus were able to influence the final outcome.

The steel staircase from a torn down office building had near perfect dimensions for the project and was attached to the building, creating one of the fire exits. Reused windows from a different torn down building were doubled and joined to meet today's energy requirements. Even steel beams and posts were re-purposed and influence the overlapping character the new floors have.

A built example demonstrating it is possible to reuse and give new life to torn down building parts and how the planning can be done.[8]

Image 12: K.118 project in Winterthur, pictogram

Image 13: CRCLR house in Berlin, pictogram

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6.4 CRCLR Haus, Berlin

Die Zusammenarbeiter, LXSY architects, ZRS engineers, 2023

An old brewery with added new timber storeys turned into a hub for new ways of communal living and working. Several parts of the building's former roof were reused for the new addition. The steel truss was repurposed as balcony railings and the roof of the greenhouse in the centre of the building.[9]

For the interior spaces LXSY architects created a diverse landscape of working areas, partly for the global network Impact Hub. These interior spaces are formed by a two-storey timber structure inserted into the existing hall. This "house in house" method minimises the interventions made on the exterior façade. Many of the added materials were "rescued" on de-construction sites, museums, exhibitions and used as is or repaired and renovated only where necessary.[10]

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