

Executive summary

The increasing demand for raw materials, the finite nature of material resources and the impact of the extraction and use of raw materials on the environment (catchword CO₂ emissions) make it clear that resource conservation must receive much more attention in economic and climate policy considerations, than it did in the past. Due to its intense use of raw materials the construction industry plays a key role in achieving resource efficiency. The circular economy aims to decouple value creation from the consumption of finite resources. The European Commission in its *European Green Deal* has hence designated the circular economy as the instrument to successfully achieve a sustainable and resource-efficient built environment.

Circulatory capacity starts with planning. Practical experience has shown that relevant decisions must be taken as early as during urban planning. How aspects of the "circular economy" can be integrated into the target system and quality management of subsidised housing or housing supported by the Quality Advisory Council is the subject of the present housing research project.

To this end, the following steps have been taken and core results achieved:

Reference system for recyclable construction

What are the characteristics of buildings that can be recycled? And what specific qualities contribute to increasing the "circular potential" of residential buildings? To identify these factors a "reference system" has been developed containing the success factors relevant for the implementation of circular principles and defining the fields of action to be addressed. Specific "levers" and their respective "mode of action" are assigned to the fields of action.

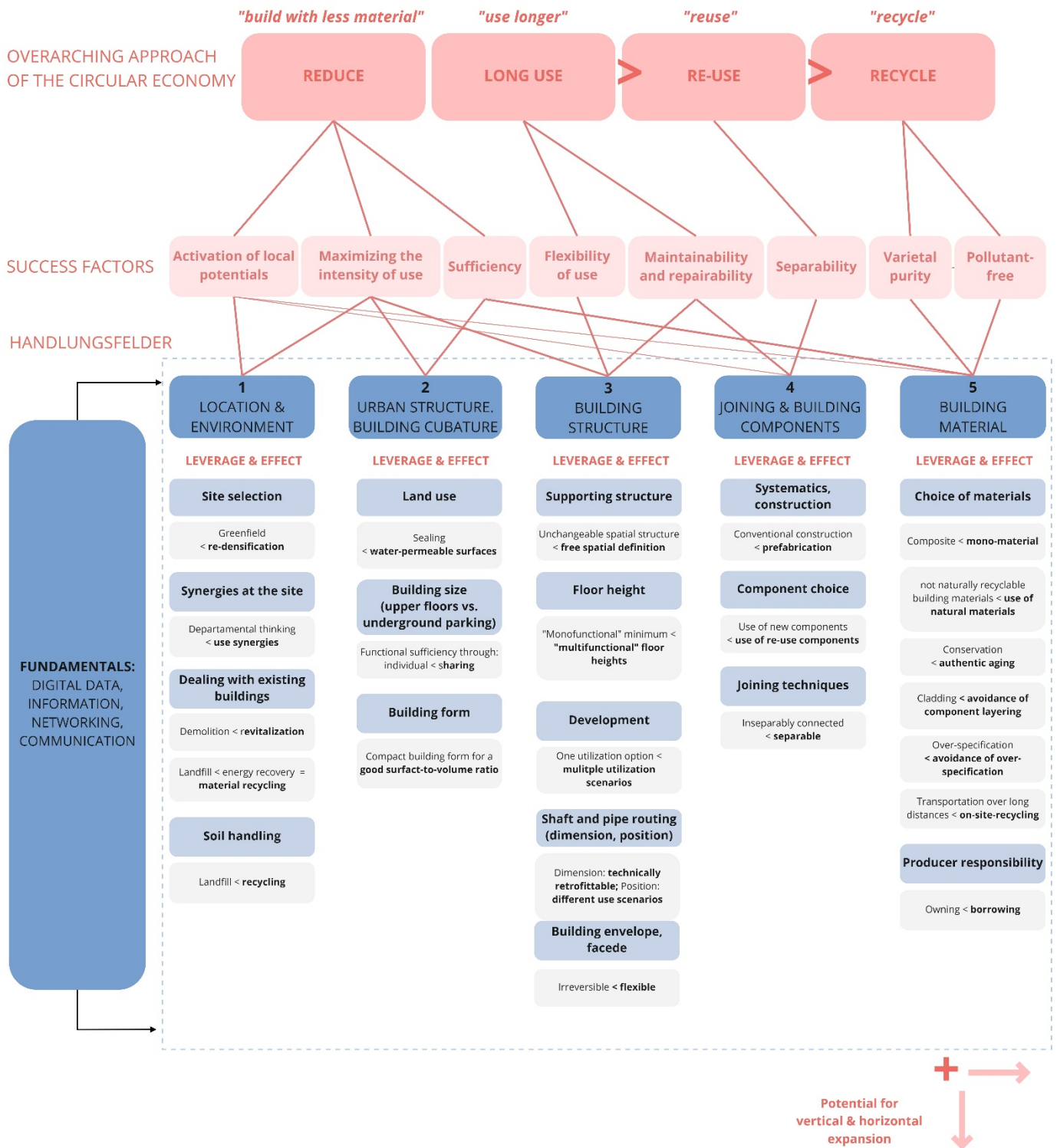


Figure 1 Reference system of circular construction" with fields of action for the implementation of success factors, own representation (© UIV)

Status quo in quality management and current deficits

To what extent are aspects of circular construction already anchored in the quality management of subsidised housing? Where is there a need for further clarification and what specifications are required? To clarify these questions, the three main levels of quality management in subsidised housing were screened: the current legal framework, the 4-pillar model and quality assurance processes. Core result: In all 4 pillars quality specifications already exist reflecting circular aspects at least in the approach or in different regulatory depths, but for a systematized anchoring of the topic, a much stronger integration of the principles of circular construction is needed - also with regard to the legal and procedural level.

Game Changer or Game Over ¹

The insights and assessments gained were summarised into six barriers that currently bar the way to circular housing. Each of these barriers, which can easily lead to the failure of the circular idea ("game over"), are contrasted with an innovative approach to action, i.e. a "game changer", which questions existing rules, makes proposals for new mechanisms and thus contributes to the gradual implementation of the circular economy in the quality management of subsidised housing.

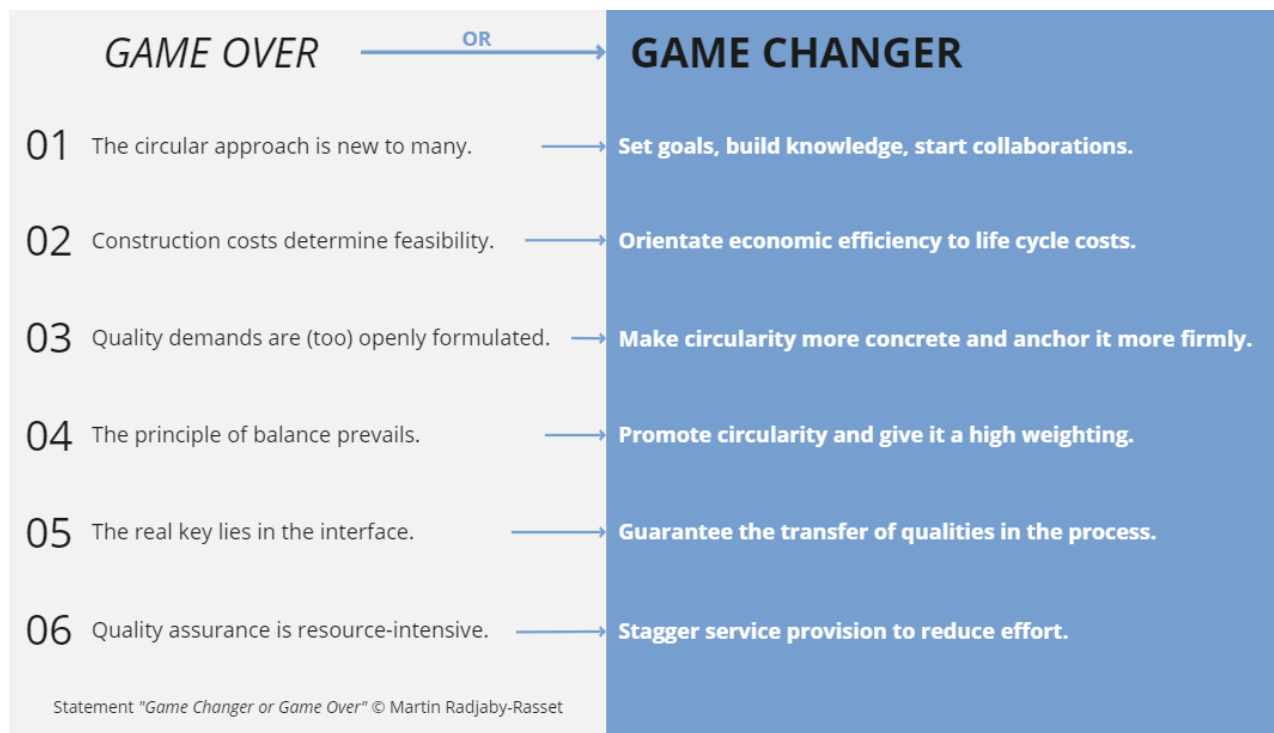


Figure 2 Comparison of conflicts/challenges and possible solutions, own illustration (© UIV)

¹ Statement (in another context) © Martin Radjaby-Rasset

An overview of challenges and possible solutions:

01. Set goals, build knowledge, start cooperation

...because the circular approach is still new to many!

To promote the approach of life-cycle oriented planning new to many it is essential to start building up know-how. Subsidised housing can make a valuable contribution here at various levels and take on a pioneering role. This means: formulating goals and expectations clearly with regard to circularity, systematising "built experience", evaluating unrealised concepts and making greater use of developer competitions to enter into new cooperation, test innovative "circular business models" and thus contribute to reconciling affordability and circularity.

02. Orienting economic efficiency to life cycle costs

...because currently construction costs determine affordability!

In order to be able to present the profitability of buildings planned and constructed according to the principles of the circular economy, cost considerations must be extended to the entire life cycle (including end-of-life costs). This also means that it is not construction costs (as up to now) that need to be assessed to determine the "economic viability" (and thus the affordability) of residential buildings, but rather life-cycle costs.

03. Making circularity more concrete and anchoring it more strongly

...because currently the quality requirements are (too) openly formulated!

In order to be able to anchor circularity more firmly in the quality specifications, a restructuring of the existing quality system (4-pillar model) and the establishment of a holistic "quality profile" is proposed. The core result of the project is what such a holistic quality profile could look like, which fully reflects the targets and possibilities of providing evidence with regard to circular construction.

04. Promoting circularity, and to this end give a high weighting in the evaluation.

...contrary to the current principle of balance!

To enable a step-by-step approach to "Circular Housing" and at the same time to demand circular principles more strongly in the creative process, a concept for "focussed priority setting" in the developer competition is proposed: focus topics are oriented towards the success factors for circular building; the fields of action and levers relevant for the respective success factor are considered more prominently in the assessment than the other criteria.

05. Guaranteeing the transfer of qualities in the process

...as the interface is always the crucial factor!

In order to ensure a consistent transfer of the qualities of the circular economy in the process, it is proposed to upgrade the current linear quality assurance process to a "cooperative structure". This means that quality management should not end with the completion of the buildings, but should be consistently continued in the phase of commissioning, initial occupation and use, and that all knowledge carriers (including committed property managers, users and experts) should be involved more closely. The

quality profile serves as a constant guideline and is passed on from project phase to project phase in the course of the process in order to make visible in each phase the qualities on which this project is based.

06. Staggering the provision of services to reduce expenditure

...since quality assurance is resource-intensive!

To ensure that evidence of qualities can be provided with a reasonable expenditure of resources, a staggering of evidence provision is proposed - along thresholds and/or through the use of multi-stage competitive procedures. The model for progressive performance provision is the "Level(s) multi-level approach", which calls for performance assessment in three successive stages - conceptual, detailed and operational.