

D.1.4.1 – BAUHALPS-Model



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BAUHALPS

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EXECUTIVE SUMMARY

BAUHALPS, part of the Interreg Alpine Space programme, aims to catalyse the circular transformation of the Alpine built environment by treating the participating regions as real-life laboratories. The BAUHALPS model serves as an interpretative framework for guiding the activities and outcomes of the BAUHALPS project. It integrates a set of defining concepts that shape the project's vision for circular transformation in the Alpine built environment. By mobilising local knowledge and resources, BAUHALPS positions circular architecture as very much a cultural project, fostering innovation that aligns technological feasibility with identity, beauty, and social equity for a sustainable Alpine future. Structured around five conceptual lenses – circularity, NEB values and working principles, genius loci, domains of innovation, and communities of inquiry – it provides a holistic approach to developing and evaluating regenerative systems.

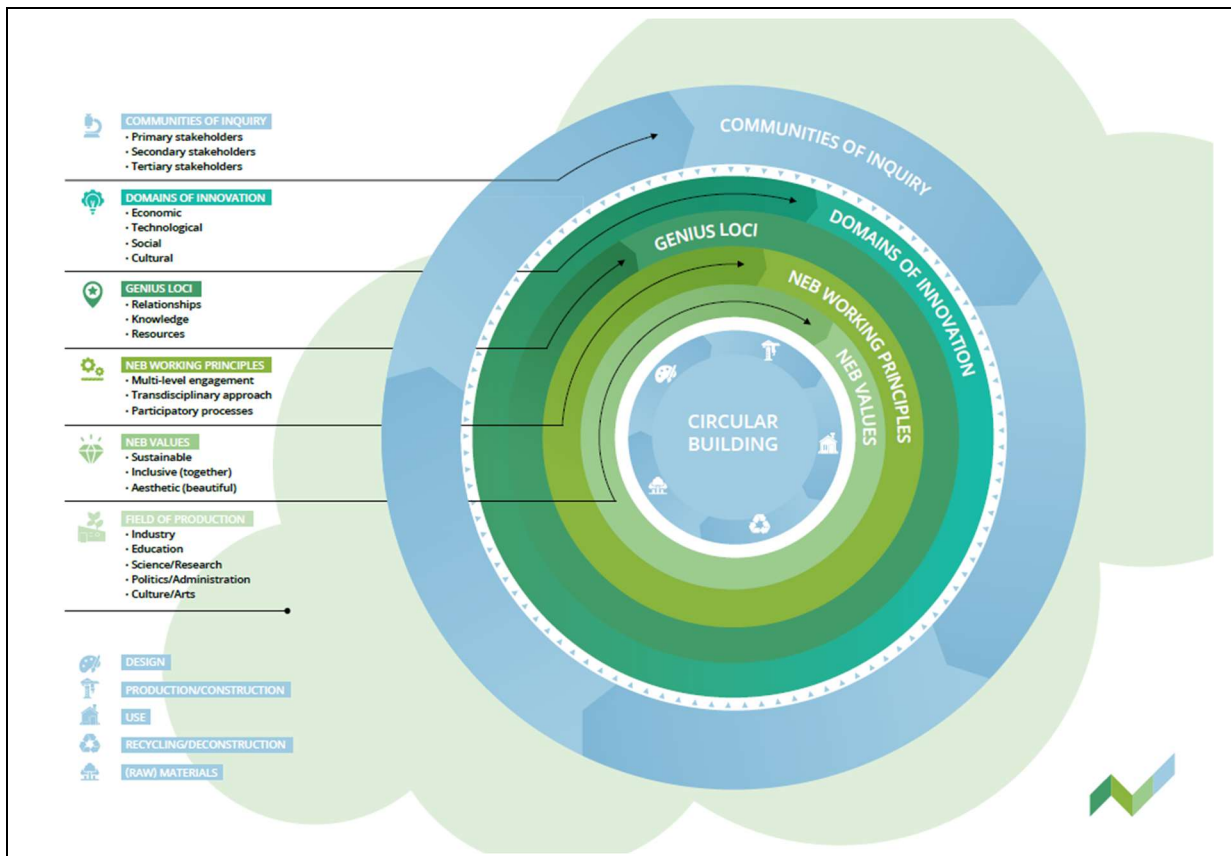
The document begins with an introduction to the BAUHALPS vision and clarifies the purpose of the model as a guiding lens for project activities. It then outlines the conceptual foundations across several layers: circular building principles, the values and working methods of the New European Bauhaus, the Genius Loci repertoire, domains of innovation, and the role of communities of inquiry. A subsequent section translates these ideas into an operational framework for a circularity maturity assessment tool, linking abstract concepts to measurable indicators. The report concludes by highlighting the model's contribution to fostering regenerative, place-sensitive development in the Alpine region.



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The BAUHALPS model brings together seven conceptual layers as depicted in Figure 1 that indicate both the intellectual and practical scope of this project and inform the activities pursued within. Central to the model is the concept of the Genius Loci in that it provides the specific context, within which the building project is realised. It is the Genius Loci which brings the model down to the very location and building project it is applied and makes it distinct. In the following sections, the individual lenses will be explained and in the case of the NEB values and working principles operationalised to fit the needs of the BAUHALPS circularity maturity assessment tool.

Figure 1: BAUHALPS Model



2. Conceptual Lenses

Circular Building

BAUHALPS centres around the concept of circularity and the advancement of circular building systems. Placed at the heart of the model therefore is a concept of circularity that – in order to ensure consistency with the European discourse – is adapted from the European Environment Agency and European Topic Centre on Waste and Materials in a Green Economy (2021)². The concept spans five phases of an economic entity's life cycle:

- design,
- production/construction,
- use,
- recycling/deconstruction, and
- (raw) materials.

All phases taken together constitute the operational context of the BAUHALPS project in that it pursues a holistic view that takes the entire construction value chain and its protagonists (from building owners to architects to builders to recyclers) into account.

The concept is then further informed by two pieces of regulation: one being the EU's Taxonomy Regulation (entered into force on 12 July 2020), and more specifically the Do No Significant Harm (DNSH) criterion as spelled out in Art. 17 of Regulation (EU) 2020/852, which determines that no economic activity should be in conflict with the taxonomy's six climate and environmental objectives in order to qualify as environmentally sustainable. Those six objects are:

- Climate change mitigation
- Climate change adaptation
- Sustainable use and protection of water and marine resources
- Transition to a circular economy

² European Environment Agency and European Topic Centre on Waste and Materials in a Green Economy (2021). A framework for enabling circular business models in Europe. [Source: [A framework for enabling circular business models in Europe | European Environment Agency's home page](#), Accessed 10.09.2025]



Genius Loci Repertoire

BAUHALPS places particular emphasis on the notion of locality, arguing that it is the local building ecosystems, communities and resources (knowledge, skills, materials, labour etc.) that are to be activated in pursuit of a green transformation in order to win the support of the local population. The notion of Genius Loci (Latin for “spirit of the place”) refers to the unique atmosphere, identity, and emotional resonance of a specific location. Traditionally rooted in Roman mythology, the concept has evolved into a design and planning principle that emphasises sensitivity to local context. It invites architects, planners, and communities to respond to the character of a place rather than impose generic solutions.

Within the context of BAUHALPS the Genius Loci is focused on three aspects – relationships, knowledge, and resources – that taken together constitute what is being referred to here as Genius Loci Repertoire. The scope of the Genius Loci Repertoire was inspired by the BAUHALPS Expert Workshop that took place in the early stages of the BAUHAPS project (Work Package 1, Reporting Period 2) and reflections on ideal-type circular building systems. The workshop offered a big picture and tapped into the composition of the building system, the complex relationships between its actors and the various ontological elements or components through which such systems come into being and are maintained (from standards and laws to structures and procedures to materials and technologies). The information gathered has been systematised into the following structure:

- **Relationships:** Relationships refer both to human and non-human actors, forming a dynamic ecology of place. Circularity respects this interplay by recognizing how both people and things contribute to shaping spatial identity and transformation. For example, reclaimed wood carries both material and symbolic weight, acting as a source of action in design decisions.
 - Actors (e. g. residents, builders, designers, community members etc.)
 - Actants (non-human forces like materials, landscapes, and histories)
- **Knowledge, skills, techniques, strategies etc.:** Embedded within the genius loci are different layers and forms of knowledge. Circular building practices can revive and integrate these forms of knowing to create regenerative, context-sensitive solutions.



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- Tacit and explicit knowledge (tacit knowledge includes embodied practices, local craftsmanship and intuitive spatial understanding whereas explicit knowledge refers to documented techniques, standards, and strategies)
- Present and absent present (e.g. knowledge stored in cultural heritage, oral histories, and forgotten methods)
- **Resources:** Resources within the genius loci repertoire are not only physical but also symbolic. These different elements offer continuity, meaning, and identity. Circularity guided by genius loci transforms reuse into a cultural act—preserving memory while enabling innovation.
 - Cultural heritage, locally sourced materials, life histories embedded in buildings and landscapes etc.

Domains of Innovations

Within the BAUHALPS framework, innovation is not treated as an isolated phenomenon but as a dynamic driver embedded across the conceptual lenses of the model. It serves as a **connective tissue** between circular building practices, NEB values and working principles, and the Genius Loci repertoire, pointing to the various dimensions of innovation that might come into play. Innovation in this context is understood as the capacity to generate and apply new ideas, methods, or technologies that create systemic value by advancing the transition toward circularity (be it through technological progress or otherwise such as the strengthening of cultural identity, social equity, ecological responsibility, or indeed economic sensibility).

It thrives in environments that foster openness, collaboration, and learning, which the BAUHALPS model operationalises through participatory processes, multi-level engagement, and transdisciplinary approaches, i. e. the implementation of the NEB working principles. Innovation framed in such a way is not merely about novelty but about change that resonates with the NEB's guiding values: sustainability, aesthetics, and inclusion. Four domains of innovation are being differentiated, and how they might play out in circular transformation is considered below:

1. Economic Innovation

Economic innovation within BAUHALPS relates to reconfiguring business models and value chains to support circularity. It addresses:



4. Cultural Innovation

Cultural innovation reframes circularity as a cultural mission:

- **Heritage-informed design and adaptive reuse:** Integrating traditional techniques with circular principles.
- **Creative placemaking and storytelling:** Embedding local narratives in spatial design.
- **Material culture and design innovation:** Reviving craftsmanship and aesthetic values in new material cycles.

Link to BAUHALPS: Draws on the “Genius Loci Repertoire”, ensuring that circular solutions resonate with local identity and aesthetics.

By situating these domains within the conceptual architecture of the BAUHALPS model, innovation becomes a multidimensional lever for transformation, bridging technical feasibility with cultural meaning and social acceptance. Each domain interacts with the NEB values and working principles, reinforcing the model’s ambition to treat circularity as a cultural, ecological, and economic project rather than a purely technological one.

Communities of Inquiry (Co)

A community of inquiry might best be understood as a group of people engaged in shared exploration, reflection and knowledge-building to the end of solving a problematic situation. Rooted in American Pragmatism and specially the works of C.S. Peirce and John Dewey, it emphasizes democratic participation, critical thinking, and shared responsibility for inquiry. Members, tied together by a set of unifying rules and forms of engagement (read: research paradigm), collectively examine assumptions, test ideas, and adapt solutions through open discussion. Dewey viewed inquiry as inherently social, where meaning emerges from interaction rather than isolated thought. This approach nurtures a scientific attitude of mind, fosters habits of reflection, collective problem-solving and transdisciplinary exchange, making them ideal for addressing complex societal challenges. In practice, they enable diverse stakeholders - citizens, experts, policymakers, creatives – to co-create solutions through inquiry-driven processes. Rather than delivering fixed answers, communities of inquiry cultivate shared understanding and adaptive learning, making them especially valuable in contexts of innovation,



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sustainability and transformation. Their strength lies in their ability to bridge knowledge silos and empower participants to shape outcomes collaboratively.

In the context of this project, three different communities of inquiry are differentiated based on their relative proximity/distance to the actual pilot/building project.

Notwithstanding this, their boundaries remain fluid, and areas of overlap naturally emerge as collaboration and dialogue progress.

▪ Primary stakeholders

- Building contractors, architects, producer, supplier, builder, demolition companies etc.

▪ Secondary stakeholders

- Community, politicians/ administrators, education/training providers, hospitals/medical practices, retailer/traders religious institutions etc.

▪ Tertiary stakeholders

- Certification authorities, trade associations, platform and data providers, training providers etc.

Field of Production

The field of production constitutes the broader social context of the BAUHALPS project or rather the individual pilot projects, within which circular building practices are being developed, tested, revised and implemented. It encompasses various sectors, ranging from industry to science and research to politics and administration to culture and arts to citizens and residents. Together they form a network of agents that determine how circularity is defined, practiced, and scaled within the built environment.

- Industry
- Education
- Science/Research
- Politics/Administration
- Culture/Arts



3. Operationalisation

This final section seeks to elaborate on how the NEB values and working principles might be embedded as indicators within the BAUHALPS circularity maturity assessment tool. It is important to point out that not all the five conceptual lenses outlined above enter the tool (directly) but only the values and working principles of the NEB. To this end they must be translated into measurable dimensions that reflect their respective degree of implementation in circular building practices.

- **Sustainability** might be evaluated not only in terms of material efficiency, but also in how far a project would regenerate ecosystems, reduce emissions and support long-term adaptability. Possible indicators include:
 - Material circularity – extent to which materials are reused, recycled, or bio-based across the building lifecycle.
 - Energy and resource efficiency – degree of energy efficiency, water use reduction and minimisation of embodied carbon.
 - Regenerative potential – contribution to ecosystem restoration, biodiversity, and climate resilience.
 - Lifecycle thinking – integration of cradle-to-cradle principles and long-term adaptability in design and construction.
- **Aesthetics** could be assessed by the degree to which circular solutions would enhance spatial quality, cultural resonance, and emotional connection, ensuring that reuse and efficiency would not compromise beauty or meaning. Indicators may include:
 - Spatial and sensory quality – quality of light, acoustics, form, and atmosphere contributing to user experience.
 - Cultural resonance – reflection of local identity, traditions, and narratives in design and materials.
 - Craftsmanship and detail – attention to material expression, construction quality, and artisanal value.
 - Emotional connection – ability of the space to evoke meaning, attachment, and a sense of belonging.



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consultation, while a transformative level would require deep co-creation and shared ownership of outcomes. Possible key metrics include:

- Number and diversity of stakeholders involved (e.g. citizens, designers, SMEs).
- Use of participatory methods (e.g. workshops, co-design sessions).
- Degree of influence stakeholders have on decision-making.
- Feedback loops and responsiveness to community input.

Were the NEB values and working principles to be operationalised in the circularity maturity assessment tool, this would gain a multidimensional evaluative capacity. It would integrate qualitative dimensions such as beauty, inclusion and sustainability alongside technical circularity metrics. This could enable broader stakeholder engagement, support cross-sectoral innovation and align circularity with cultural and societal goals. As a result, the tool would differ from others by assessing not only systemic efficiency but also socio-cultural impact, making it more relevant for policy, funding and strategic development in complex transition contexts.

4. Final Remarks

The BAUHALPS model offers a novel conceptual framework for integrating circularity metrics with the values and working principles of the New European Bauhaus. Designed as both an interpretative and operational tool, it situates circular building practices within a broader cultural, ecological and social context. By combining regulatory standards such as the EU Taxonomy's Do No Significant Harm (DNSH) criteria and the Italian UNI/TS 11820 circularity standard with NEB's core values – sustainability, aesthetics and inclusion – the model enables a multidimensional approach to assessing and advancing circularity in the built environment.

Set in the Alpine region, BAUHALPS treats the territory as a real-life laboratory, mobilising local knowledge, resources and communities to co-create regenerative building systems. The model is structured around five conceptual lenses: circular building, NEB values and principles, genius loci repertoire, domains of innovation and communities of inquiry. These lenses guide the development of a circularity maturity assessment tool that not





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only measures technical performance but also captures cultural relevance, stakeholder engagement and aesthetic quality.

By embedding NEB principles into measurable indicators, BAUHALPS fosters transdisciplinary collaboration and systemic transformation. It positions circular architecture as a cultural mission, aligning technological innovation with regional identity and social equity - thus redefining sustainability as a lived and shared experience.

