

REUSE S TO XL

A network of hubs for research and resale of second hand architectural components and materials, as an active strategy for sustainability and circular economy

ISSUES: SCARCITY OF REUSE AND POTENTIAL IN SWITZERLAND

REUSE



Fig. 1: Reuse among resource management strategies

Faced with waste accumulation and natural-resource consumption, the construction sector is now seeking practical strategies which would rethink the current cycle of material use. Among these strategies is the reuse of construction materials and architectural elements, a design and construction process which aims at extending material life-cycle after their first use for further uses.

In contrast to recycling, reusing seeks to maintain the shape of construction components as well as their embodied culture, history, craft, and technology. The architecture of reuse holds a **very high potential** as an active practice participating in the circular economy, allowing conservation and flow of tangible and intangible local resources in regional territories.

IN SWITZERLAND

Although reuse is a long-standing practice, **no significant project** of this kind has been built in Switzerland since the mid-1960s. Nationally, the construction sector consumes nowadays between 70 and 80 million tons of material per year, of which 90% is new material, 10% is recycled materials and a minute part of reused components.

1. CONFEDERATION SUISSE, BIRKENMEIER, Anna, 2017.03.03. «La Suisse avance dans le recyclage des déchets de chantier» [online]. Accessed 2018.20.05.

IMPACTS: INNOVATION, PLANET, PEOPLE, CULTURE & CIRCULAR ECONOMY

1. An economic and social drive

participation in local resources conservation, not relocatable job creation in and outside of the hub, professional-reintegration opportunities.

2. An innovation drive

synergies emerging from pooling experiences accumulated in and outside of the hub.

3. A regional supply

the housing stock and the hubs are suppliers to each other, in a regional distribution channel.

4. An opportunity for architecture of reuse

the hub itself would be designed with second-hand components.

5. A link in a territorial strategy

three hubs covering Switzerland in a 60-kilometer market reach^{2,3}

2. Except for most mountainous areas

3. Distance set upon the concept of «critical distance», below which reuse is energetically worth it. It is comparable to the one needed to source metal profiles for the BedZed project (50 km).

REUSE S TO XL: DESIGN OF WETSERN SWITZERLAND'S HUB



Fig. 4: Site model, 1:2'000



Fig. 5: North elevation

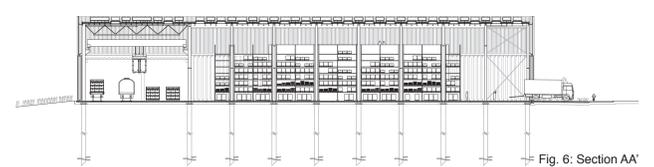


Fig. 6: Section AA'

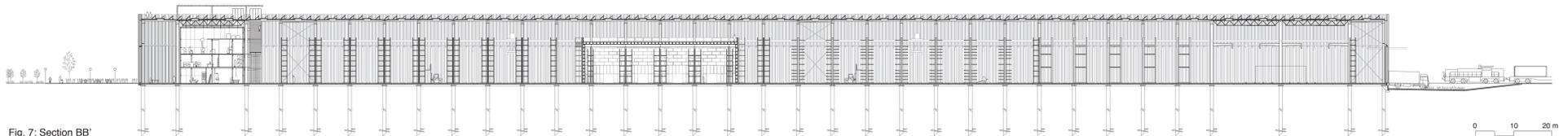


Fig. 7: Section BB'

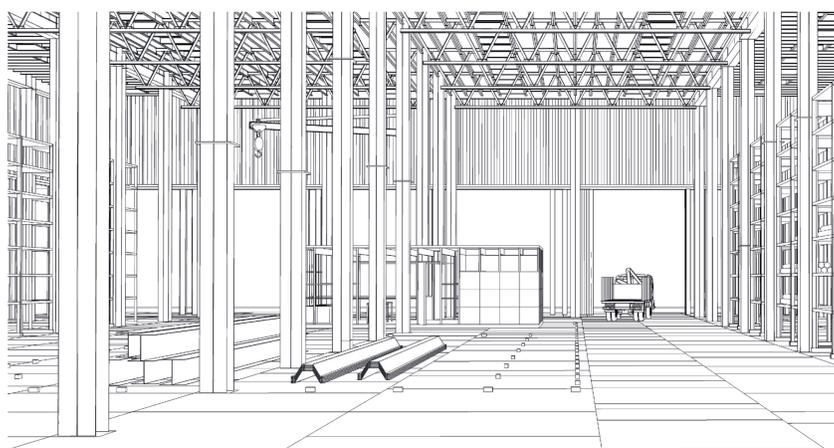


Fig. 8: Perspective on the repairing and storage space for XL elements

PROPOSAL: A NETWORK OF «HUBS FOR REUSE» AS AN ACTIVE ANSWER FOR SUSTAINABILITY

GOAL

Faced with this situation, the first goal of this research is to **identify the main obstacles** of reuse in Switzerland. The second goal is to **design a strategy** for the future development of the practice. The research is based on experiments realised in comparable economic contexts, a specific literature review and interviews.

STATEMENT

Beside the supply-chain issues, obstacles were identified as construction habits and culture (e.g. collective repulsion for DIY appearance), norms and performance (e.g. normative incompatibility), and economic constraints (e.g. extra workforce costs).

The research work devises a "hub for reuse", a new platform model that would act as a physical carrier for the development tools (e.g. digital database, experimentation-adapted legal framework) and handle synchronisation issues between de-construction and construction sites. The new model of hub would act at the same time as a **reselling-store** and as a **research center**. Beside storage, it would host public workshops, educational programs, repair stations and professional conferences.

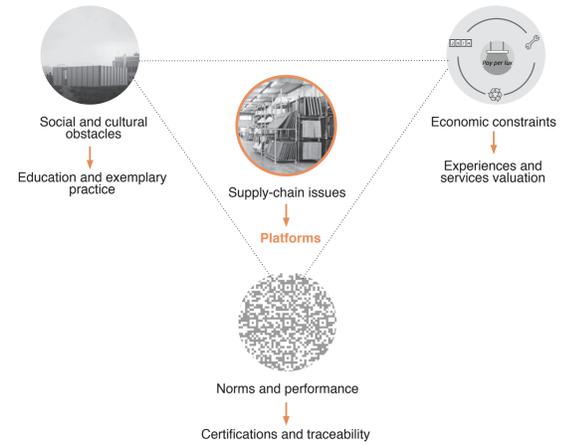


Fig. 2: Key obstacles to reuse in Switzerland and hypothesis of corresponding levers

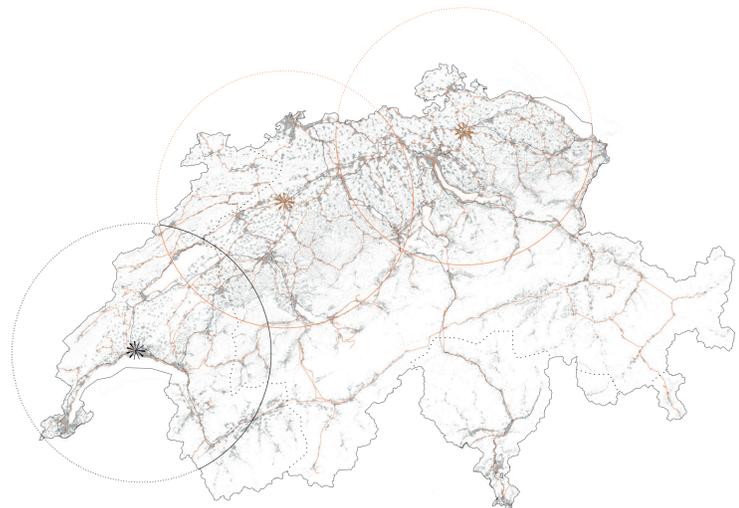


Fig. 3: Location and market reach hypothesis of the «hubs for reuse»

- 1. Site-selection**
the project stands on underused-land and makes the most of existing infrastructures.
- 2. Timing process**
the hub is progressively constructed by groups of spans, accordingly to the development of the reuse sector.
- 3. Spatial strategy**
the hub is designed to offer a flexible space in order to match the constantly changing material flow.
- 4. Energetic strategy**
the project is designed to use a minimal amount of material and energy, aiming for bio-climatic optimization and heating with low-tech thermic panels made of repurposed materials.
- 5. Material selection**
the project is designed to be fully disassembled and materials selected are about to be recycled or landfilled.



Fig. 9: Thermic panel progressively realised by the hub
Fig. 10: Glass façade made of two layers of double-glazing
Fig. 11: Stackable boxes isolated with textile intending recycling
Fig. 12: Cut and reassembled concrete walls for the ground
Fig. 13: Decommissioned sheet piling for exterior cladding