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# Building culture or can it go away? Renovation pilots can help

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**Abstract.** Renovations, especially of historical buildings worthy of preservation, often present the clients with seemingly unsolvable tasks, be it conceptual, organizational or financial. However, historical buildings built before 1919 account for between 20-30% of the existing stock in the rural regions of Vorarlberg, which means that there is considerable potential [1]. In our experience, it makes sense to differentiate between technical and creative renovation consulting when providing assistance in the run-up to a renovation. In the reorganization BEFORE consultation above all the question is urgent, which possibilities are in the building and which financial loads with which reorganization variant come to the owners, because the owners of house often lack the creativity and experience, in order to come even on a suitable variant. In a pilot project, the Energy Institute Vorarlberg in cooperation with 12 external architects, the so-called renovation pilots, has now completed over 30 such consultation cases since January 2019, and more are in the works. The refurbishment PRE-consultations of the first one and a half years have shown that about one third of all consulting cases revolve around houses that are in some way worthy of historical preservation. In order to take into account the special features of these buildings, especially with regard to their energy efficiency, this topic is taught in greater depth to renovation pilots in a training module and a brochure within the framework of the Interreg Alpine Space Project ATLAS<sup>1</sup> [2].

**Keywords** – Redevelopment consulting, Redensification, Redevelopment rate, Buildings worth preserving, Housing creation.

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<sup>1</sup> ATLAS is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme

## 1. Introduction

Due to the above-average land consumption in Austria and the strong population pressure, especially in urban regions, there is a need to develop innovative, sustainable solutions for energy-efficient housing creation and renovation. To this end, it is necessary to create holistic planning principles and criteria for resource-conserving building concepts and housing development. One- and two-family houses and small apartment buildings in particular often have large housing reserves and, at the same time, high renovation backlogs. The open development structure (mainly characterized by detached single-family houses and small apartment buildings) is still the most popular form of housing in Austria, but also the most inefficient in terms of energy and resource consumption. Around 67 % of the buildings in Austria have one or two residential units. Even in Austrian cities (> 20,000 inhabitants), the share of one- and two-family houses is 65 %. Around two thirds of these buildings were constructed before 1981 and therefore don't meet current energy standards, which means that there is also great potential for optimization from a building technology perspective. Living conditions change, and it can be helpful for owners to know the options for adapting their homes to their changing needs.

With the 2009 Austrian Renovation Funding Guideline, the housing subsidy published a scope of services defining renovation consulting and advertised an associated consulting grant. A very strong take-up was the result, but after a few years demand leveled off. Renovation consultants reported, that their customers asked repeatedly for another renovation variant even three years after the consultation. Consulting clients came to the Energy Institute Vorarlberg with completed renovation documents and the question of whether they should carry out the consultant's proposal. Often they weren't convinced by the renovation proposal that had been prepared. A consulting deficit wasn't deduced from this situation. In the energy consulting of the Energy Institute Vorarlberg the time limit for consultations was set in some cases and repeated contact with the advice seekers was maintained. Many efforts were made to obtain all the information, which was important to the advice seekers until they were able to make their decisions.

Barriers for the clients, which led to unsureness about the renovation, were identified as:

- Advice clients asked for cost information at a very early stage and uncertainty about possible costs have a strong inhibiting effect. Often it's already a difficulty to ask for offers, if one doesn't know the rough outlines of which answers will come back.
- The question of possible extensions, creation of additional living space, partitioning, renting was never an issue in the defined and subsidized renovation consulting. The scope of the advice was to a certain extent predetermined by the funding and the advisors therefore were only concentrated on structural and energy-related measures.
- For many of those seeking advice the consultation proceeded too quickly and they weren't able to express their non-energy-related questions. However, it is precisely the possibility of partial leasing that creates the financial prerequisite for refurbishment.

Our experience from the refurbishment consultations shows that in the owner-occupied housing sector, i.e. for residential buildings with one or two residential units, it makes sense to distinguish between technical and conceptual refurbishment consultations.

In the technical renovation consultations, the advice mainly revolves around insulation materials, windows, building services and solar energy use. In contrast, conceptual renovation consultations address the questions of future use, a possible conversion concept, the renovation concept and to what extent the financing concept can be brought into line. In Vorarlberg, this form of consulting is called renovation-PRE-advice.

**It fits in ...**

**The necessary enthusiasm sets in**



**... to interlock.**

Energieinstitut Vorarlberg | © 2018

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**Figure 1.** The enthusiasm required for a refurbishment option occurs when the new utilisation concept, the matching refurbishment concept and the affordable financing concept interlock and all needs and one or two wishes are also satisfied in the process.

## 2. Methods

The obstacles mentioned in the introduction have led to the introduction of a renovation-pre-advice, in which mainly the most urgent questions are answered. Usually, the homeowners lack the creativity but also the experience for this, especially in the question of costs and possibilities of reconstruction. Consulting an architect would be helpful for most homeowners, but it hasn't become established to consult planners at a very early stage.

The renovation-PRE-consultation then deals with topics such as:

- Addition of a story, extension
- Division into two or more residential or rental units
- Intergenerational living, housing for the elderly
- Climate impact adaptation.

A cost database has been created in which cost elements appropriate to the use are managed, such as the costs of a bathroom. The calculation is done with an EXCEL calculation aid, in which the costs are recorded separately according to eligible and non-eligible costs right from the start. The cost database and calculation tool are further developed and maintained by the group of renovation pilots as a team.

In a pilot project, the Energieinstitut Vorarlberg, in cooperation with more than a dozen architects, has now completed 60 such consulting cases since January 2019, and another 50 consulting cases are in progress (effective January 2021). On average, a renovation pre-consultation requires about 25 hours of time. This consultation is currently financed by cost contributions of the location municipality with 400 euros and by 400 euros deductible for the consulting customers and the necessary further contribution from the budget of the energy consulting. The architects aren't doing anything different than they have done so far. Their time is shortened by the standardization and the subsidy reduces the reluctance to use this service. Architects are finding better conditions for their consulting work.

In addition to dealing with the refurbishment of buildings worthy of preservation, the further training of refurbishment pilots includes chapters on legal knowledge (inheritance law, tenancy law, residential property law, guideline value law, etc.), methods and chances of success of mediation, spatial planning concepts and current redensification strategies of the state and the regions, climate impact adaptation measures for buildings and communication training. The catalog of teaching objectives for prospective renovation pilots has now been accepted by the Austrian Federal Working Group for Energy Consultant Training. As a result there is a certificate for the renovation pilots of this federal working group.

The catalog of teaching objectives contains:

Table 1: Catalog of teaching objectives.

Introduction	Prehistory, sense and goal of this form of consultation	3 hours
Basics of redensification	Study "ReHABITAT Julia Lindenthal, density case of Metron, Beat Suter CH, overview of existing local and regional development concepts in the country	6 hours
Buildings worth preserving	Cultural significance, recognition and handling, technical features and possibilities	3 hours
Climate impact adaptation measures	Reaction to heat and dry periods, spontaneous local heavy rain, higher wind speeds	3 hours
Legal knowledge	Insight into inheritance law, tenancy law, residential property law and recognition of situations in which a lawyer or notary is needed	3 hours
Communication	Mindfulness, attention, non-verbal communication, proactive listening	12 hours
Economic efficiency	Dealing with the cost database and the calculator, subsidies	6 hours
Mediation	Recognising situations that can no longer be solved with architecture and knowing how mediators work and their network	3 hours

### 3. Results and examples

The renovation-PRE-consultations of the first one and a half years have shown that about one third of all consulting cases revolve around houses with historical preservation value. According to the Federal Office for the Protection of Monuments, about 15% of the buildings in Vorarlberg are classified as worthy of preservation. This is an indication that owners of buildings worthy of preservation feel particularly addressed by this form of consulting, but that the worthiness of preservation of a building also stands as a renovation hurdle at the same time. These cases have special consulting needs and require both knowledge and creativity, for example, on the following topics:

- Assessment of the building fabric with regard to further, at least 40 years of use
- Condition of the basement, stabilization or renovation
- Technical possibilities in case of too low room heights
- Insulation of floors against the ground in case of low room heights
- Solutions for window replacement suitable from the point of view of energy technology and design
- Alternatives in case of questionable exterior insulation
- Solutions for the installation of a ventilation system
- Static conditions for the removal of partition walls

- Enlargement of the living space, if for architectural reasons annexes from earlier times should be removed or replaced

The ATLAS project on energy retrofits of historic buildings and the associated database provide valuable information on these topics. (Link: [www.hiberatlas.com](http://www.hiberatlas.com))

### 3.1 The grandmother's house

Andrea Gollob lives with her grandmother in a house built by her great-grandparents in 1900. Since the roof truss was in danger of collapsing, the young building owner sought advice from a renovation guide. During the consultation, different scenarios for the renewal of the roof truss and barn floor, as well as the expansion of the interior were elaborated. Moreover, an inquiry for the classification of the building as an "object worthy of preservation" was submitted, since this status would mean better subsidies for the renovation.

Externally, it appears inconspicuous and not worthy of preservation, but the house reflects the traditional building style in Vorarlberg at the time of its construction and thus represents a classic example of the everyday business of the renovation pilots.



**Figure 2.** House Gollob front view  
Photograph and consulting architect:  
Andrea Vogel- Sonderegger



**Figure 3.** House Gollob back view  
Photograph and consulting architect:  
Andrea Vogel- Sonderegger

### 3.2 Three-generation house

The grandson of a single elderly man marries, has children and is looking for an apartment. Their relationship is in a healthy state so that they are thinking of living together in the existing single-family house.

There were three options to choose from:

- Renovate the house and add an additional floor
- Adapt the house and add a one-person apartment on the ground floor
- Emergency solution: Renovate the house and rent an age-appropriate apartment for the grandfather

The consultation showed, that with the imponderability of the development of the rent costs, the additional floor would probably be the more expensive solution at the time however in longer terms the more economical and calculable variant. Another positive side effect is the additional apartment, which the new generation can use in the future.

## Can you share and expand? How?



**Figure 4.** Can you share and expand? How?; Drawing and consulting architect: Mario Lins

### 3.3 Inner-city farmhouse becomes multi-generation family home

This house is where parents want to fit their families of three children, the consultation was about preliminary clarification of options and costs to get a sense of feasibility. The consulting architect found a feasible solution to accommodate three apartments of equal value but at different costs due to the initial situation. For the fourth family, a bungalow from the 80s is available on the same plot. In the consultation result, the family sees the financial feasibility of the project and so they can consider how they want to share the building and take the legal steps. (For this: PPT slide "Image\_1")

## Finished. (2020)



E. Drössler, Energieinstitut Vorarlberg, 2018



**Figure 5.** Finished multi-generation family house with cost sharing of the floors  
Photograph and consulting architect: Benjamin Miatto



### 3.4 House Nigsch

In a spectacular panoramic location, at 1,250 m altitude on the steep slope in the Great Walser Valley, stands the 200-year-old farm. The stable and barn are still used for agricultural purposes, the residential part has been empty for over 10 years. The Walser house in log construction has low ceiling heights and appears quite attacked by the ravages of time and woodworm. What to do with this particular property? In the decision-making process, the owner is supported by a "refurbishment pilot" who initiates the necessary preliminary investigations and develops alternative planning options.



**Figure 6.** View above House Nigsch  
Photograph: Energy Institute Vorarlberg



**Figure 7.** House Nigsch view from front  
Photograph: Energy Institute Vorarlberg

### 4. Discussion and conclusion

It's problematic to almost impossible to bring the building stock, which is worth preserving and listed, up to an energetically contemporary level. However, we can afford to preserve historic buildings as they are or make only minor thermal improvements if the large mass of historically uninteresting buildings are consistently and comprehensively energy retrofitted. This results from the fact that the energetic target values do not have to be reached at each individual building, if the average value fits over the entirety. PRE-consultation supports the energy policy desire to achieve the best for buildings that can be easily renovated and the best possible for buildings worth preserving.

The potential for this form of consulting is great. Vorarlberg has about 67,000 single-family houses, which were built before the turn of the millennium [3]. Since the beginning of the reorganization offensive of the country with the year 2009 about 4,000 of it with promotions were reorganized. Renovation. The state of Vorarlberg has therefore set itself the goal of including this now standardized renovation-PRE-consulting as a funded consulting format in the state renovation funding guideline on a permanent basis from 2022.

The motivating factors to promote this form of public sector consulting are:

- Vacancy mobilization
- Redensification
- Creation of low-cost housing for young families
- Creation of housing suitable for the elderly
- Improvement of the townscape and preservation and maintenance of the building culture
- Reduction of the refurbishment deficit
- Contribution to the achievement of energy policy goals
- Adaptation to climate change

The high number of still unrenovated single-family houses could be a motivation for architects to specialize in this task.

There is hope that the renovation-pre-advice can increase the renovation rate, because the homeowners can easily find out which jewels they are sitting on and where they could be developed.

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