# THE NEW EUROPEAN RENOVATION WAVE

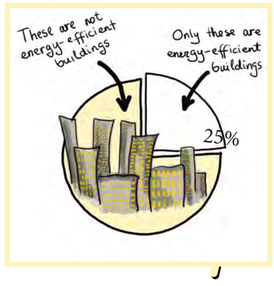
NO LIMITS - MAP OF EUROPE
Johann Ortin Õun

**THE AIM OF THIS STUDY IS TO FIND OUT HOW TO MAKE RENOVATION MORE POPULAR, HOW TO GET MORE COUNTRIES AND COMPANIES TO RENOVATE INSTEAD OF BUILDING NEW AND WHAT EVEN IS „GOOD RENOVATION“.**

One of the main things what holds back renovation is its complexity and the hidden challenges that emerge during renovation. To combat that, a catalogue along with a over-European renovators network has to be created, which would cover different topics, like:
When to renovate,
- How to plan and start renovation,
- Renovation's depth, time and budget,
- What sponsorships or supports are available,
- How to foresee and adapt to hidden challenges,
- Energy efficiency and what materials to use,
- How to resolve common difficulties in the process.

**FOR MORE INFO ABOUT THE CATALOGUE, PLEASE TURN THE PAGE.**

About 75% of european buildings are not energy-efficient. 90% of european buildings were built before 1990, and 80% of these buildings will still be standing in 2050. Around 52% of the European building stock is in need of change.




There are two ways of solving this:
**building new or renovating old.**

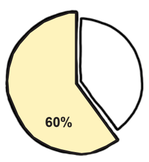
Renovating old is the better solution and the way to go, because:

- Renovation preserves the buildings character and spacial qualities.
- Renovating is sustainable and more environmental-friendly than building new, as the building sector is responsible for a lot of pollution.
- Renovation is usually faster and cheaper, although it may pose hidden difficulties along the way.
- Renovation of buildings in degenerate areas can help bring whole neighbourhoods back to life.
- Communities who have lived in these buildings for decades, deserve to be saved.

Finding out what is **“good renovation”** by looking at three different renovation projects thoroughly (these are indicated on the map):
- Sheldberg house in Germany
- Estonian Academy of Arts building in Estonia
- Grand Parc apartment blocks in France

**EU ENERGY RENOVATION MARKET WAS WORTH APPROXIMATELY EUR 109 BILLION IN 2015, CONSISTING OF 882,900 JOBS.
THESE FIGURES COULD BE SIGNIFICANTLY HIGHER.**

Deep renovations would generate a total energy saving potential of almost 60% of current consumptions, which, in turn, would allow for a 10% reduction of the current total EU primary energy consumption and approximately a 20% jobs increase in the construction sector.




TALLINN, ESTONIA

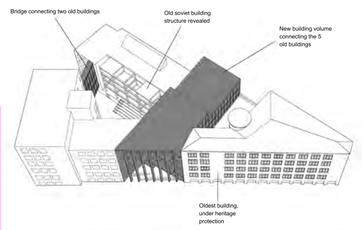

**ESTONIAN ACADEMY OF ARTS BUILDING**

Renovation architect: KUU Architects (EST)
Year: 2018
Area: 12300 m2
Cost: 28 million eur (2276eur/m2)
Time of construction: 15 months
Original buildings architect: Eugen Habermann (EST)
Original project: 1926, completed 1932; additional add-ons in 1960s and 1970s.
Original purpose: Sock factory, later textile factory

The aim of the new study building was to create synergies within the school. On the site were 5 old buildings, built in different times. The synergies had to be created between the different eras and also between old and new in the buildings.

The five old buildings also had different floor heights. The architects solved the problem with a new building volume in the middle, which has a transparent and easy-to-move internal structure.

One of the buildings was also under strict heritage protection. Nevertheless, in the architectural solution the architects decided not to prefer one monument of the period to another and to treat all buildings with the same methodology. All the layerings that came with the buildings were equally treated. The only difference is in the tools used to finish the buildings - the interior finishing layers of the Estonian-era building are cleaned with a scalpel, elsewhere with a sandblast.




ARNBRUCK, GERMANY


**SCHELDBERG CONTEMPLATION HOUSE**
Renovation architect: peterhaimerl. architektur (GER)
Year: 2017
Area: 180 m2
Cost: 458 873 (2549eur/m2)
Time of construction: 4 years
Original project: 1839
Original purpose: Farmhouse

Located in a forest clearing between a farmhouse and a granite quarry, the building dating from 1839, a wooden log structure with a granite base, had half fallen into ruin. The mossy granite blocks around the house provided the inspiration for the redesign. The architect translated them into 43 x 43-centimetre concrete bars of varying lengths. These fill the gaps in the ramshackle building, support old beams and continue the dilapidated structure of the former barn and stable. Everything that could be preserved, such as weathered wooden shingles and raw granite walls, was retained.

The rough, natural design of the fair-faced concrete establishes a link between new and old materials. Large glass areas positioned between the concrete beams convey lightness and connect the house with nature.
The architect preserves the history of the old building, while simultaneously taking it into the future. Instead of concealing the decay, the fragile condition is worked out and enhanced with a new aspect. In doing so, he works with contrasts and modern materials – at once radical and subtle.

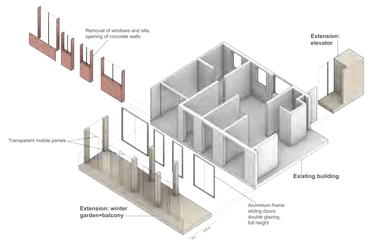
The Schedlberg house before renovation was in ruins: half of the house still standing, on the granite foundation, the other wooden half almost completely gone.

BORDEAUX, FRANCE


**GRAND PARC BORDEAUX**
Renovation architect: Lacaton&Vassal, C. Hutin, F. Druot
Year: 2016
Area: Existing 44,210m², extension 23,500m²
Cost: 29,6 million eur (437eur/m2; 53 000eur/apartment)
Time of construction: 26 months
Original project: 1960s
Original purpose: Social living

When the high-rise buildings for high-class residences are defined as examples of a responsible housing for the future, these buildings in question reach these qualities right away, in a generous, economic and sustainable manner. The general economy of the project is based on the choice of conserving the existing building without making important interventions on the structure, the stairs or the floors.
The budget of the project was concentrated on the extensions, the key point to improving the dwellings quality in a significant and sustainable way. The overall cost of transformation respects the budget, based on the usual cost for a basic renovation of facades, insulations, and facilities.

The extensions of 3,8m widen the space of use and the mobility through large glazed sliding doors connecting every room to the winter garden, offering, as in a house, a pleasant private semi outdoor space. The energetic performance of the building envelope is highly improved by the addition of winter gardens which act as passive solar collectors.




**ON THE OTHER SIDE OF THE PAGE, YOU CAN FIND OUT ABOUT:**

- WHY IS RENOVATION BETTER THAN BUILDING NEW (A)
- THE THREE EXAMPLES SEEN HERE DECONSTRUCTED:HOW CAN WE RENOVATE SUCCESSFULLY (B)
- WHAT IS GOOD RENOVATION (C)
- HOW BIG IS THE RENOVATION POTENTIAL IN EUROPE (D)
- WHAT ARE THE COSTS AND BENEFITS OF RENOVATION (E)
- WHAT ARE THE TOOLS FOR SUCCESSFUL RENOVATION (G)
- THE NEW EUROPEAN RENOVATION NETWORK AND CATALOGUE: (F)
  - WHAT IT IS ABOUT
  - WHAT IT WILL CONTAIN
  - HOW TO USE THIS NEW NETWORK TO MAKE RENOVATION EASY AND COMMON

1 million buildings in need of renovation (110 million in total)
1 million buildings in good condition (100 million in total)

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# THE NEW EUROPEAN RENOVATION WAVE

Johann Ortin Õun

## A WHY RENOVATION IS BETTER THAN DEMOLISHING AND BUILDING NEW

More and more buildings are facing demolition for being poorly designed, cheaply built or under-maintenanced. Demolition is easy, and it's easier to build a new building rather to renovate an existing one. Furthermore, local goverments think that new buildings with their A-calss energy levels are always better, but is that really so? Old buildings have a character, a soul, a feeling, old buildings carry cultural heritage. Modern glass facades, which are dominating modern city skylines do not have these spacial qualities or any heritage.

Additionally, we can not forget about the people, who have lived in these old houses for decades. They have a community, a history in this building. Demolishing these builings take that away. Also, studies say that demolition of a home has mental effects on the people who lived there as well as neighbours. Sometimes the problems which are attributed to the buildings are actually problems of the surroundings. Poor infrastructure or lack of nature and public spaces are needs that have progressed over time.
The fourth argument against demolition is the environmental impact, that erecting a new building makes. The building sector is responsible for almost 40% of all global energy-related emissions. In order to cut that down we would have to look for more sustainable solutions, materials and also have reduce the amount of new buildings. To do that, they key lies in reactivating and renovating existing buildings and areas.

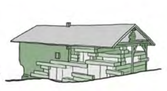
*"Never demolish, never remove or replace, always add, transform and reuse."*
- Lacaton&Vassal


## B 3 EXAMPLES DECONSTRUCTED: RENOVATING SUCCESSFULLY

Why did I pick these examples?
A successful renovation is not easy. Just adding insulation and repainting the building is helping to fight energy poverty, but it does not offer anything new to the users of this building, nor does it add any new architectural value. These three examples which have been chosen for this project are all from different scales and very different locations: a one-family house in the countryside of Germany; three apartment blocks in a run-down neighbourhood of Bordeaux, France and an university building in the center of Tallinn, Estonia. These projects have all displayed great planning by architects and have brought in both new architectural value and benefits to the people. By looking at different building scales and types of usage, one can specify the reocurring steps of successful renovation used in these renovation projects. What are the most important aspects of each project and how to combine them

The most important techniques and planning manners have been combined into the „Successful renovation toolbox" visible below. Ideally, when planning a new renovation project, the architect should use all of these techniques to make their renovation project a complete success. However, not always all of these techniques can be used due to the nature of the existing buildings or heritage building regulations. Still, all architects should have this catalogue of successful renovation techinques in mind when planning any renovation project.

A table describing the important aspects of the buildings under investigation: the type of renovation; the added architectural value; the added value to people


| #01 EAA main building | #02 Schedlberg house | #03 Grand Parc Bordeaux |
|---|---|---|
| - Reactivation<br>- Extension | - Rebuilding, supporting<br>- Reactivation | - Renovation<br>- Extension |
| - Reactivating and repurposing old buildings<br>- Keeping the old layers<br>- Tastefully integrating the new with the old<br>- Connecting different eras and levels | - New view to renovating old farmhouses<br>- Compelling architecture<br>- Reusing of old materials<br>- Continuing the original narrative, building in the existing context | - Adaptable way of housing blocks' renovation<br>- Affordable, but tasteful renovation<br>- Enlarged living spaces<br>- Apartments gained a new room |
| - Renovating a dominant city center building<br>- An interesting and creative space for students<br>- Improved quality for the whole nighborhood | - Old cultural heritage buildings are saved<br>- New spacial qualities for people<br>- Helps people to see through architecture | - New looks for old "ugly" apartment blocks<br>- Improved living conditions<br>- Improved quality for the whole neighborhood |

## C GOOD RENOVATION CONSIDERS USERS AND THE EXISTING STRUCTURE EQUALLY

**Added value to people**
A good renovation is a project that adds value to the users of this building. It makes the life of people better, easier and improves their overall quality of life. Bringing in more light, enlarging living spaces, or just creating whole new spacial situations. In another sense, people that use the building do not have to be it's inhabitants - they can also be just bypassers or neighbours. By renovating important or dominant buildings in an area, the whole area gets a benefit. And also the sustainability factor - a renovated house is more environmetally friendly and also cheaper to live in due to the heating costs being smaller.
**Added architectural value**
Another important aspect is the architectural value of a renovation. When renovating old buildings, the first architectural aspect is their age and heritage. When saving that history and heritage and preserving that, that is itself a value, but renovation should always try to add to that, to compliment it. Another thing is old buildings' character, what comes with the age, which combined with new materials and contruction methods creates synergies and forms new narratives. Retrofitting new parts of buildings inside the old shell and using the old walls and materials which are left behind as a part of the renovation is important.

**CONSIDERING THE EXISTING STRUCTURE**
A major aspect of good renovation is the building which is being renovated. It it important to assess is thoroughly before renovation. The renovation must **make use of the good parts of the existsing space and highlight them.** Modern retrofits are welcome when they don't leave the existing spaces in their shadow. After all, much of the point of renovation is to make use of already existing structures. Furthermore, the **renovation can hide or correct the faults of the old building.** Renovation should be dynamic and form a synergy between the good spacial situations of the old and the new.

## D THE EUROPEAN RENOVATION POTENTIAL

**Buildings account for 40% of the EU's energy consumption, 36% of its CO2 emissions and 55% of its electricity consumption.** This makes emissions and energy savings in this sector vital to meeting the EU's climate and energy targets.

The stock of buildings in the EU is relatively old, with more than 40% of it built before 1960 and 90% before 1990. **Older buildings typically use more energy than new buildings.** The rate at which new buildings either replace this old stock, or expand the total stock, is quite low (about 1% a year). This implies that if the energy consumption of buildings is to be reduced **the renovation of existing buildings is key.**

The current renovation rate of existing buildings is low, with only about 1- 2% of the building stock renovated each year, although it is estimated that renovation accounts for 57% of all construction activity. **The vast majority of these renovations do not utilise the full potential energy savings that could be achieved.**

**INCREASING THE RATE AT WHICH EXISTING BUILDINGS ARE RENOVATED FROM 1% NOW TO AT LEAST 2-3% PER YEAR UNTIL 2030 IS A KEY OBJECTIVE OF THE EU'S AGENDA.**

**12,7% of the EU population has a leaking roof in their home.** That percentage is of course bigger in the poorer countries of Europe, but that means that these are the areas Europe should develop more. The EU has laid out lots of different grants and monetary supports, the people just have to use them. Also, **renovation regulations should be concrete, coherent, ambitious and broader in scope.** Regulations also need to be enforced and reporting made easier for EU member states.

**6,9% of the EU population is not able to keep their home adequatly warm** in the colder times of the year. But this is not so much a problem of money or salaries, but poorly built buildings. Millions of households experience energy poverty because of energy inefficient buildings and appliances, high energy expenditures, low household incomes and specific household needs. These buildings have to be renovated as soon as possible, because no people should have to choose between heating or eating. These are the exact things we as EU citizens fight against.

**THE RENOVATION POTENTIAL OF BUILDINGS IN THE EU IS HUGE: UP TO 110 MILLION BUILDINGS OF THE TOTAL 210 MILLION COULD BE IN NEED OF RENOVATION.**

## E COSTS AND BENEFITS OF RENOVATION

Renovation is not always 100% the right way. Always the site-specific differences have to be considered. The overall costs associated with building renovation are split between the property owners, public authorities and tenants (when the buildings are rented or leased) as explained below.

**NO PEOPLE SHOULD CHOOSE BETWEEN HEATING OR EATING.**

**Costs and burdens for property owners and landlords**
- Assessment costs
- Installation costs
- Financing costs
- Hidden costs
- Costs of understanding regulations

**Costs and burdens for authorities**
- Set up costs
- Implementing administrating, monitoring costs
- Other costs e.g. advising on regulations

**Costs and burdens for tenants**
- Potential rent increases
- Hidden costs

The benefits overcome the costs in many ways. First, property owners - even though the renovation costs money, property owners will surely earn it back since the value of their property is higher after renovation. Also, it is just better to live in and the upholding costs like heating are smaller. For authorities, the costs of setting up laws, administrating costs are balanced by the higher rates of employment, the raise in GDP and overally better life quality of the people. For tenants, the rent might increase, but on the other hand the rent increases for a reason - savings in energy bills, and better quality of life in the building.

**Economic benefits**
- Employment
- GDP and public budgets
- Innovation
- Sectoral modernisation
- Energy Security
- Productivity benefits

**Environmental benefits**
- Energy savings & GHG emissions reduction
- Reduced usage of materials

**Social benefits**
- Health benefits
- Reduction energy poverty
- Wellbeing / Comfort benefits
- Energy bill savings
- Increase in property value & tenant satisfaction

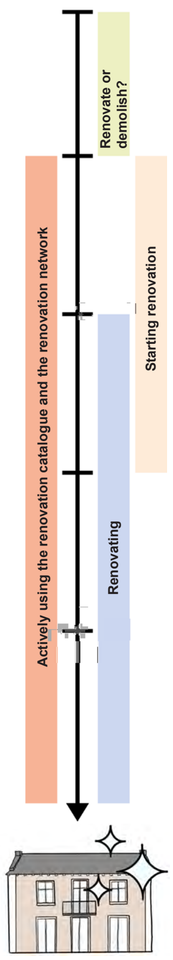
**The main disadvantage of renovation is its complexity.**
Every building site is different and there are almost no universal solutions. Also, dealing with old buildings requires experience and skill - what to save, what to build new and how to make the structure solid and resistant to weather. Furthermore, renovation projects are almost guaranteed to cost more than anticipated, thanks to constantly emerging new hidden problems. If there was a way to predict these hidden problems and have concrete instructions what to do in certain situations, renovation would be much easier and perhaps more common.

This complexity will be solved in this project by creating a catalogue, which will include all types of instructions about renovating, from planning to execution. Along with the catalogue, an over-european network of renovators will be created, where all people can create posts, ask questions, and upload solutions to problems. So next time anyone comes over the same problem, a solution is immediately available.

*Read more about the catalogue and the network below.*

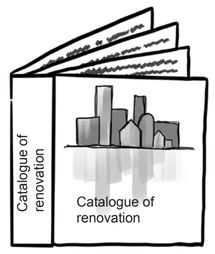
**APPROXIMATELY 80% OF TODAY'S BUILDINGS WILL STILL BE IN USE IN 2050, YET 75% OF THIS STOCK IS ENERGY INEFFICIENT.**

## F CREATING AN RENOVATION CATALOGUE ALONG WITH A OVER-EUROPEAN NETWORK OF RENOVATORS


**ABOUT THE CATALOGUE & NETWORK**

To make renovation easier, more affordable and more common, an over-european renovators network will be created along with a catalogue for renovation. The catalogue will cover everything there is to know about renovation - from the decision whether to renovate or demolish, up to specifics, like what kind of materials to use in certain situations. Various experts will contribute to the making of this catalogue and it will also be uploaded to the internet as a form of a webpage. This webpage will also house the renovators network. It's known that when renovating, hidden problems and challenges will emerge on the way. If there would already be a solution to all of these problems, it could make renovation much faster and easier. The network would work like a forum, where everybody from renovating homeowners to construction experts can upload solutions to problems. The users can then also react and comment these solutions, and eventually with enough users, the will become self-governed. There will also be moderators, who can make edits and correct faults. As well as a section „stories", which would work as a blog - so people can upload their renovation projects to inspire and help others. The network will be free to use.

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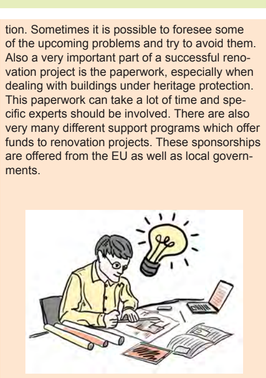
1. Renovate or demolish?
Renovation is *not always* the right choice. When deciding whether to renovate or demolish, there are 8 major aspects to consider: the people living in and around the building, the complexity, the scale, time and cost of the project, the environmental effect, and the future purpose of the building. Before renovating or demolishing a building, all these aspects have to be considered thoroughly. In the field marked with a „?" these aspects are elaborated further.

2. Starting Renovation
When starting renovation, there are lots of things one should know. The design and planning has to be done properly and nicely. This might be the most important part of the whole renovation process. For a good renovation project, many different things have to work simultaineously and this process can not be done in a rush. Architects should remember the successful renovation toolbox. When starting a project, the architect must also think about the budget and therefore the depth of the renovation. Sometimes it is possible to foresee some of the upcoming problems and try to avoid them. Also a very important part of a successful renovation project is the paperwork, especially when dealing with buildings under heritage protection. This paperwork can take a lot of time and specific experts should be involved. There are also very many different support programs which offer funds to renovation projects. These sponsorships are offered from the EU as well as local governments.



3. Renovating
Renovation itself is perhaps the easiest part of the project. When renovating there are 5 major things to keep in mind. First, a site should always have someone there who can give some answers and work the catalogue and the network. It doesn't have to be an expert of any kind, it can also just be a construction worker who is familiar with the network. Secondly, it is very important that the builders themselves are flexible. When renovating, even if very well planned ahead, there will be complications and situations which can not be foreseen. Then it's necessary to adapt to changes, use the catalogue and the network to quickly find answers and move on. It is also imporant to stay in schedule, since time is money. When some things take too much time, they are perhaps not done right. Energy efficiency on site is also very important. Moving and placing materials and coordinating the order of works have to be done right. The work should be diveded into groups and workers should work them strategically. All the materials and work methods should be coordinated with the catalogue, network, architect or on-site expert.

4. Dealing with complications and unexpected problems in...

This is the chapter where the linkage between the catalogue and the network becomes obvious. In the catalogue, there can only be a selected amount of solutions to problems that occur during renovation and working with old buildings. But problems are unexpected and there could be a completely new complication whenever, so the network has to have the solutions. And if it doesn't have a solution, the users can upload their solutions to problems to the network. In the catalogue, there will be the most common problems with their answers, but the network will expand every day. The main reason, why this network will be created is to keep down the time of finding new solutions to new problems.

The network users will be everybody, who are involved in the construction (renovation) sector:
- construction workers,
- electricians,
- plumbers,
- construction inspectors,
- restorators,
- engineers,
- city planners,
- architects,
- interior designers

... and when they all contribute to the system, it will eventually become self-governed. The users can commentate, suggest edits and upload different variations to the solutions. Different themes will be created, everything from the foundation or sewage to interior design specifics.

With a network like this, renovation will become so much easier, quicker and more affordable. Then Europe can reach the 3% renovation rate per year that we are working towards.

**RENOVATION HAS 8 IMPORTANT ASPECTS TO CONSIDER BEFORE STARTING:**

**PEOPLE**
People, who have lived in these building for decades have formed communities and friendships. These communities deserve to be saved. By demolishing a building, one also demolishes the existing social connections and interactions. One must always take into consideration the view of the people living in the buildings and in the buildings nearby.

**COMPLEXITY**
Demolition is quite easy - one takes down the old building and then constructs a new one. But renovation is much more complex. The conditions and situations are always different, and new problems will surely appear during the renovation process. To help tackle this complexity, this cataloegue along with an over-European network will be created.

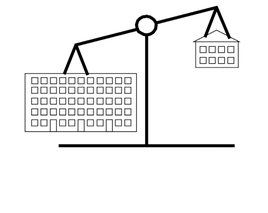
**MENTAL ASPECT**
Studies have revealed high levels of stress is associated with losing a family home during home demolition, and the stress doesn't only carry out immediate effects but also long-term mental consequences. Also, demolition has not only a mental effect on the people living in the building, but also to the neighbourhood and other buildings surrounding it.

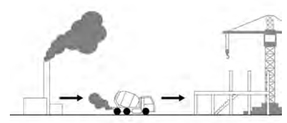
**SCALE**
When deciding whether to demolish or renovate, scale is often the defining aspect. Construction companies are afraid of big-scale renovations due to their complexity. But complexity can be tackled with the help of this catalogue, network and involving experts on site. Furthermore, the bigger the renovation project, the bigger the environmental aspect and good done for the planet. Also, big public renovation projects tend to be very popular in the view of the public, because old buildings give an unique spacial experience.
**COST**
When talking about costs, time is very important. Renovation is almost always faster than constructing a new building. Also, the cost of renovation is low, since the amount of materials needed is less than building from the ground-up. The depth of the renovation process can be chosen: how much of old to leave, how much to build new - with this balance of old and new costs can be kept as needed.

**ENVIRONMENT**
The environmental aspect of demolition alone is quite big. In some countries, construction waste and old buildings make up to 35% of the landfills volume. A lot bigger aspect is the amount of energy needed to erect a new building. Building sector is already responsible for about 40% of all the energy-related emissions worldwide. Thus, the less we build, the less we pollute. Through renovation, old structure is often left untouched and less materials are being used, so the environmental damage is lower than building new.

**FUTURE PURPOSE**
A very big matter to think about is the future purpose of a particular building. A lot of great projects have come out this way and examples are all around the globe. Just consider very thoroughly what could the future purposes of a particular building be. An old apartment building can be a new office building, an old factory can house new apartments and so on. Again, old buildings have spacial qualities and a feeling one just can't achieve with a new building.





**ADDING STRUCTURES**
Often when renovating, there is a need to add new structures to the existing building mass. This is of course a very good way to modernise an old building and is very welcome. It is difficult too, because the public is often quite sceptical about new add-ons to historical buildings, so it has to be done with great taste. The most important thing is that the old and the new have synergy and create a whole.

## G THE SUCCESSFUL RENOVATION TOOLBOX

These tools and techniques in the toolbox are derived from the three renovation examples analyzed above and the successful renovation toolbox is also a chapter in the renovation catalogue. The toolbox is easy to understand and a good reminder to have in mind or when designing a renovation project. These are just 8 of the techniques an architect can use; there are countless more in the catalogue.

**Enlarging openings**
...is perhaps the easiest way to improve life quality in a room, to let in more light and give the room „breathabilty".

**Restoring, conserving**
... properly when renovating an old building is important, as the old architecture should be considered at least as valuable as the new.

**Retrofitting**
Combining clearly distinguishable old features with modern can bring freshness into the project and create unique spacial situations.

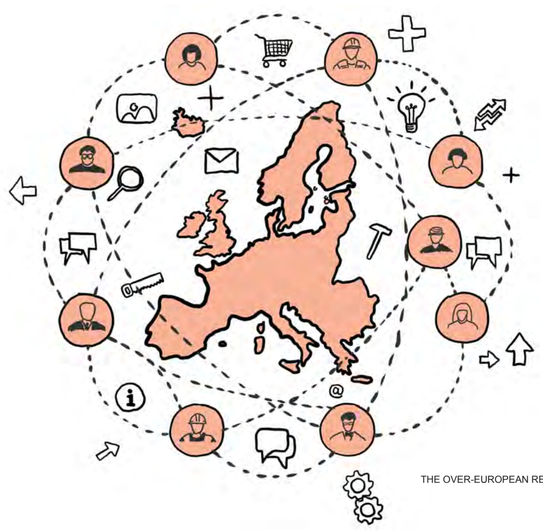
**Extending floor area**
...in forms of balconies or extensions extends the building and adds to the quality of life in the building.

**Adding insulation**
...helps fight energy poverty by making energy bills smaller due to less heat losses; ... makes buildings quieter from the outside (or inside) noise.

**Preserving old layerings**
... helps users of the building appreciate the architectural history; makes the building visually interesting.

**Facade renewing/visual betterment**
... is on of the most shallow types of renovation, but i makes a big difference on the visual of the building.

**Reusing old elements**
... is sustainable, since no new materials are used and old elements add to the peculiarity of the building.



THE OVER-EUROPEAN RENOVATION NETWORK

**THE RENOVATION CATALOGUE WITH THE NETWORK WILL MAKE RENOVATION EASY, COMMON AND SLOW THE RAPID CONSTRUCTION OF NEW BUILDINGS.**