

Conference on sustainable renovation models
 Parallel Sessions - Part II
 2b) Reducing the costs of the renovation projects



Buy - Retrofit - Sell - a simple game?

Aachen, April 22th 2016

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Sestao Berri

Sestao - Basque Country - SPAIN



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Index Buy - Retrofit -Sell - a simple game?



- Context.
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- Refurbishment of 25-31 Txabarri Street.
- Previous Process of Refurbishment.
- Agreement with Owners.
- Planification of the Refurbishment.
- Energy efficiency measures.
- Photographs of the execution of the works.
- Lessons learned



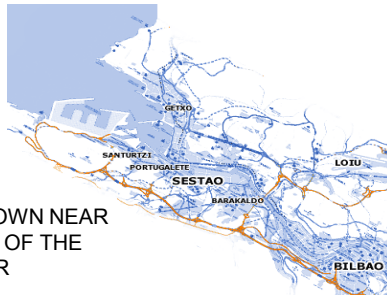
Context - Where is SESTAO MUNICIPALITY?

GEOGRAPHIC LOCATION

- North of Spain.
- Region of the Basque country.
- Province of Biscay.
- Municipality of Sestao.



INDUSTRIAL TOWN NEAR
THE MOUTH OF THE
RIVER

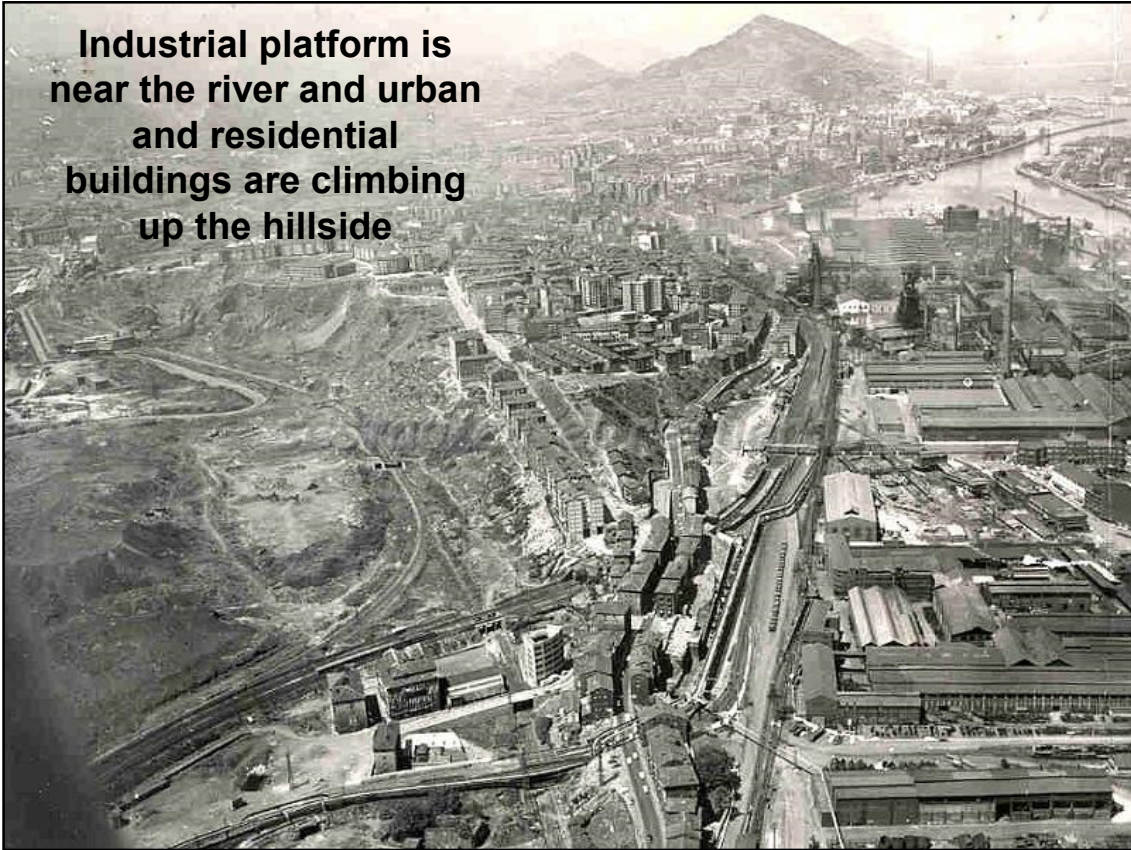


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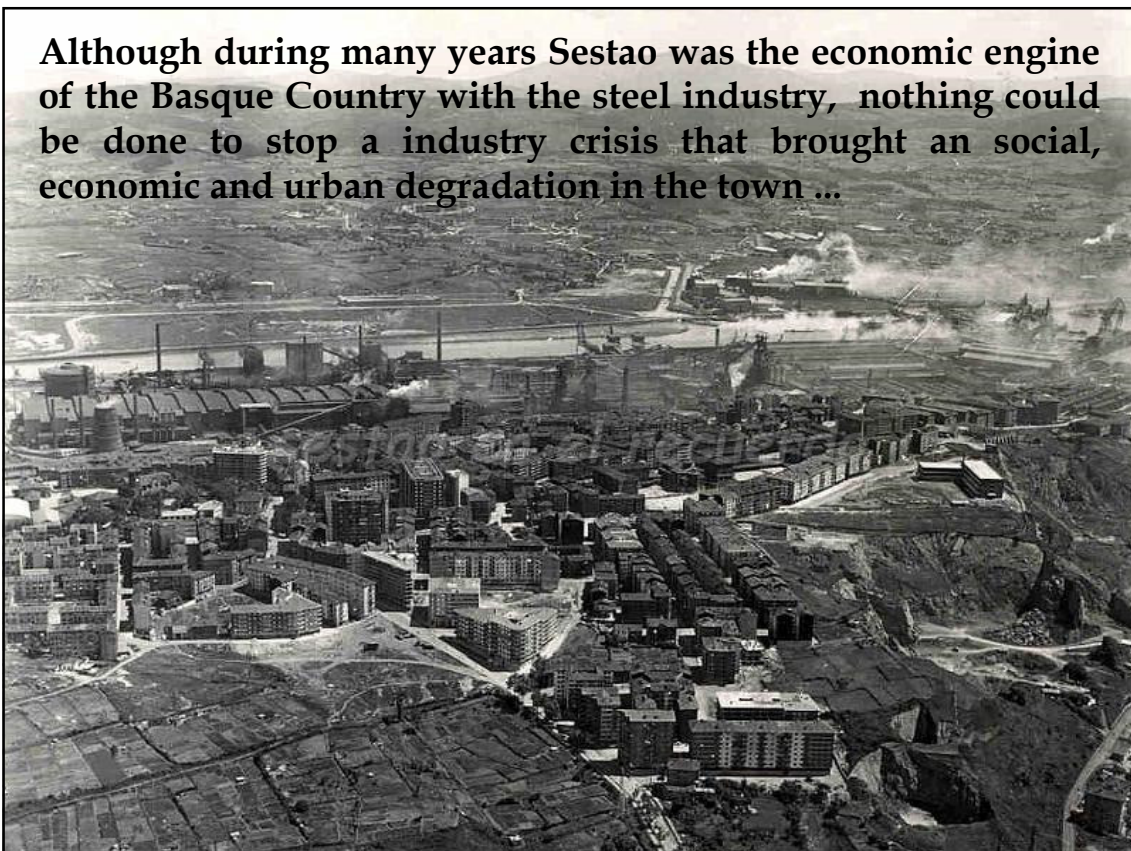
SESTAO PHOTOGRAPHS ON THE FIRST YEARS OF 20TH CENTURY



**Industrial platform is
near the river and urban
and residential
buildings are climbing
up the hillside**



**Although during many years Sestao was the economic engine
of the Basque Country with the steel industry, nothing could
be done to stop a industry crisis that brought an social,
economic and urban degradation in the town ...**



The constitution process Sestao Berri SHC



2005 Agreement signed between the Basque Government and the City Council to form the company Sestao Berri with the following corporate purpose: To act as a management company for the social and urban regeneration (promotion, rehabilitation, rental social dwellings, ...)



Since then the town is slowly
being regenerated



Smart District Sestao

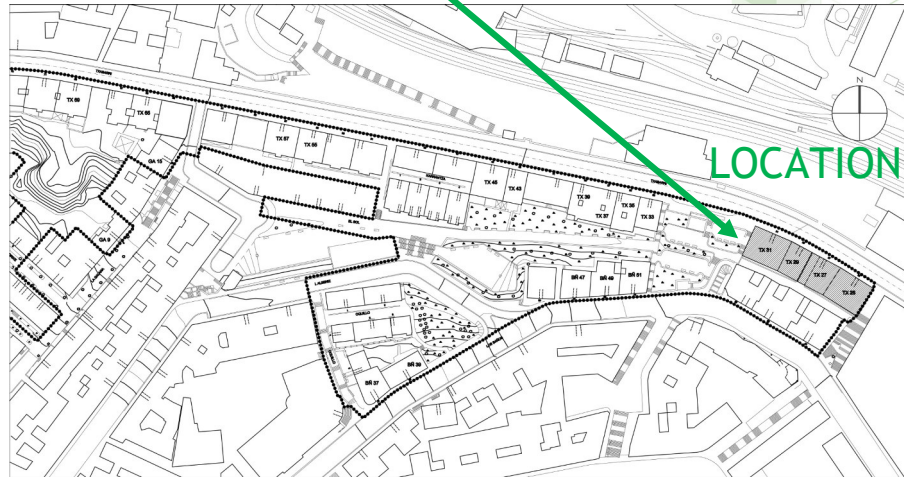


TOTAL GROSS FLOOR AREA (m ²)	24.500	⊙	⊙	TOTAL budget allocated	1.225.000 €
Buildings replacement proposal	Gross floor area (m ²)	On schedule/delayed by X months/removed with replacement proposed	(planned) start date of construction	(planned) end date of construction	(requested EC contribution)
Txabarri 25-31	3.850	On schedule	13/04/2015	2016	192.500 €
Autonomia 21 Los Baños 22 y 24	4.630	On schedule	2016	2017	231.500 €
Autonomia 22 Los Baños 59,61 y 63	4.935	On schedule	2016	2017	246.750 €
Autonomia 24, Txabarri 19,21,23 y J.C.Arriaga 15 y 17	4.310	On schedule	2016	2017	215.500 €
La Bariega 2	1.250	On schedule	2016	2017	62.500 €
Grupo Marques de la Fidelidad 1 a 7	4.100	Cancelled	2016	2017	205.000 €
Alameda Las Llanas 19 y 21	1.200	Cancelled	2016	2017	60.000 €
TOTAL GROSS FLOOR AREA	24.275	⊙	⊙	TOTAL Budget allocated (requested EC contribution)	1.213.750 €



REFURBISHMENT OF THE BUILDING TXABARRI 25-27-29-31

BUILT IN 1890

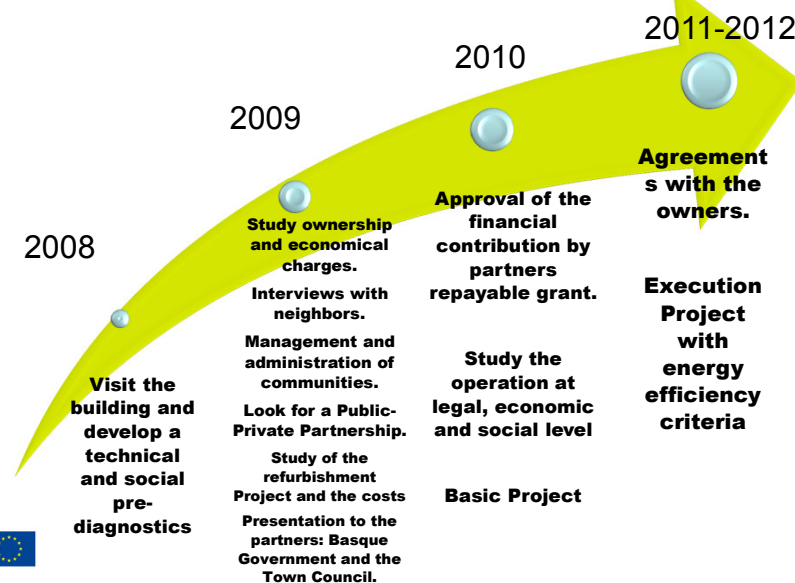


LOCATION



PROCESS TO REFURBISHMENT

PREVIOUS STEPS



AGREEMENTS WITH THE OWNERS (1/3)

We expected that the 50% of the owners of the dwellings were going to participate in the refurbishment but finally only 10% of the owners are doing it. The difference is caused by the financial crisis that is living Europe during these years.

Unemployment has hit this town more than other municipalities in the same province, with special intensity. In addition, this building is protected so its renovation is more expensive than any other one.

When we began to review homeownership, we noticed that in a high percentage of cases, banks had executed the loans to the families so we had to reach agreements with banks or with banks and families over time.



AGREEMENTS WITH THE OWNERS (2/3)

- In the new building will be 47 dwellings (four more than in the original one).
- As I have said before, only 10% of the owners wanted to participate in the project. They must pay the difference between their original dwelling and the new one. All of them will take the new flat in one portal with 13 dwellings. Meanwhile, they are relocated in public houses.
- The other three portals, with 33 dwellings, are going to be qualified as subsidized public housing and will be sold to applicants of public houses.



AGREEMENTS WITH THE OWNERS 3/3

- Three types of agreements have been given with the owners:
1. Non resident owners that sell their dwellings to Sestao Berri.
 2. Resident owners who will take a new dwelling in the refurbished building, meanwhile relocated.
 2. Resident owners that sell their dwelling to Sestao Berri and is relocated definitely on a floor of social rental because they can't face the refurbishment of the building.



ORIGINAL STATE OF THE BUILDING



ORIGINAL CONSTRUCTION



Year of construction: 1890

4 portals: Tx 25: 11 dwellings
Tx 27: 12 dwellings
Tx 29: 10 dwellings
Tx 31: 10 dwellings

TOTAL: 43 dwellings

Builted surface: 4.300 m² (58x14 m). **B+4+BC**

Protection: Total

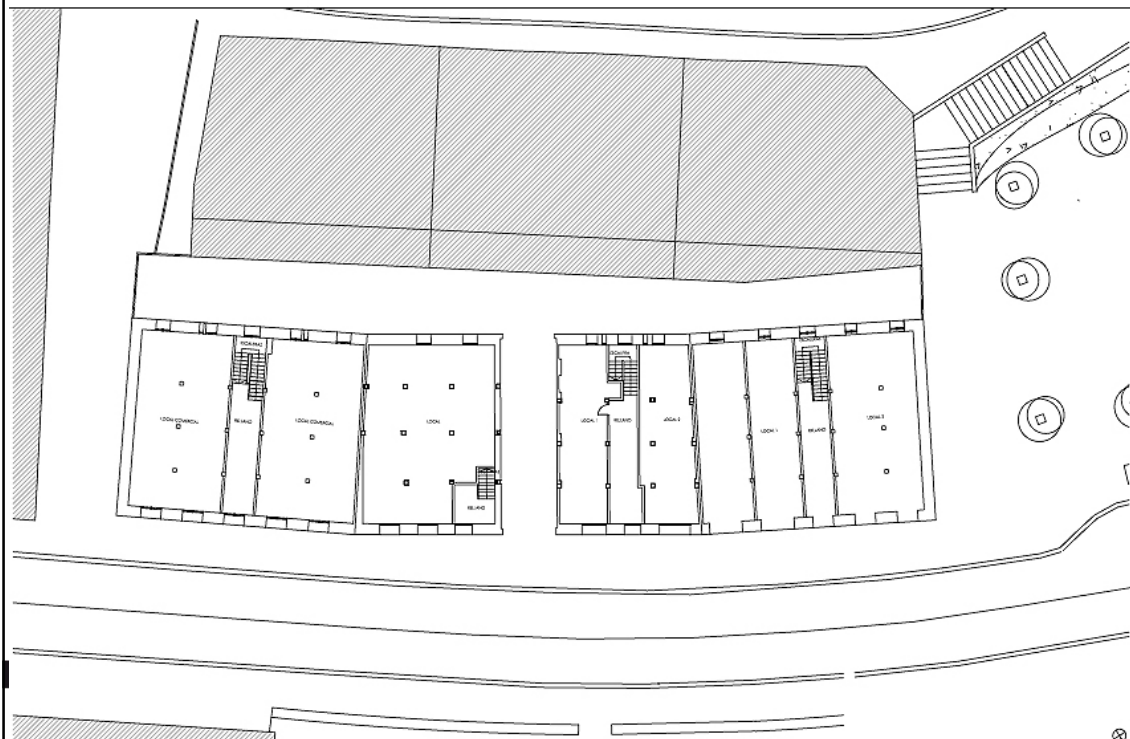
Structure: Bearing walls and wooden porches

Roof: Tile

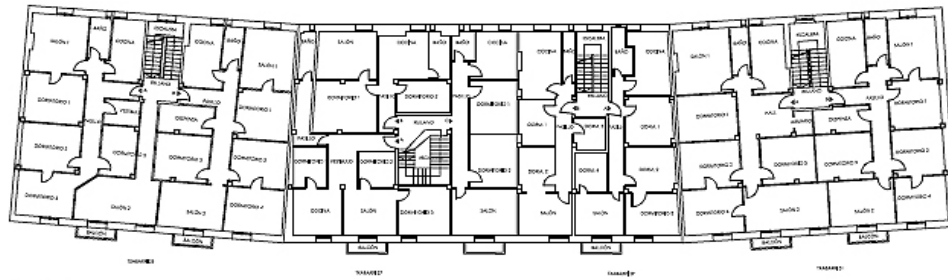
Envelope: brick facade of variable thickness (46 and 28 cm)
and wooden roof. Wooden windows with single glazing..



LOW LEVEL



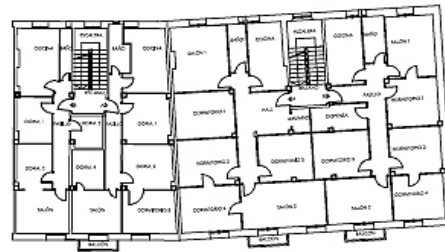
FIRST FLOOR AND TYPE FLOOR



FIRST FLOOR

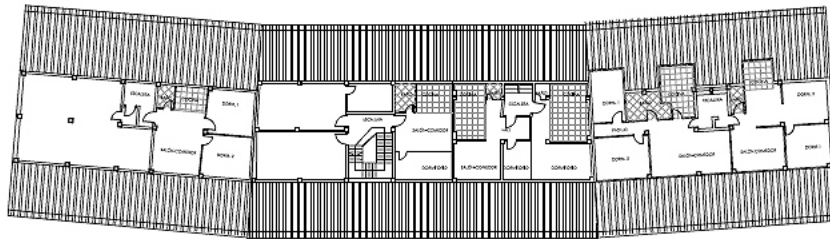


FIRST FLOOR

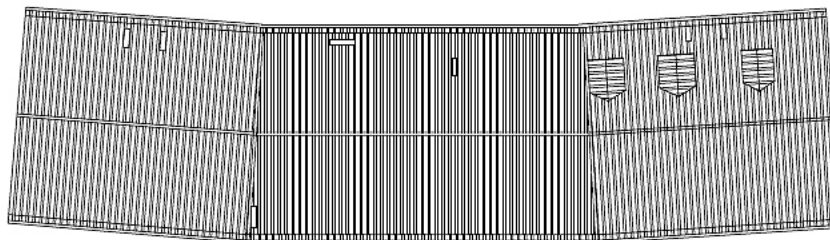


FIRST FLOOR

PLANT UNDER COVER AND COVER

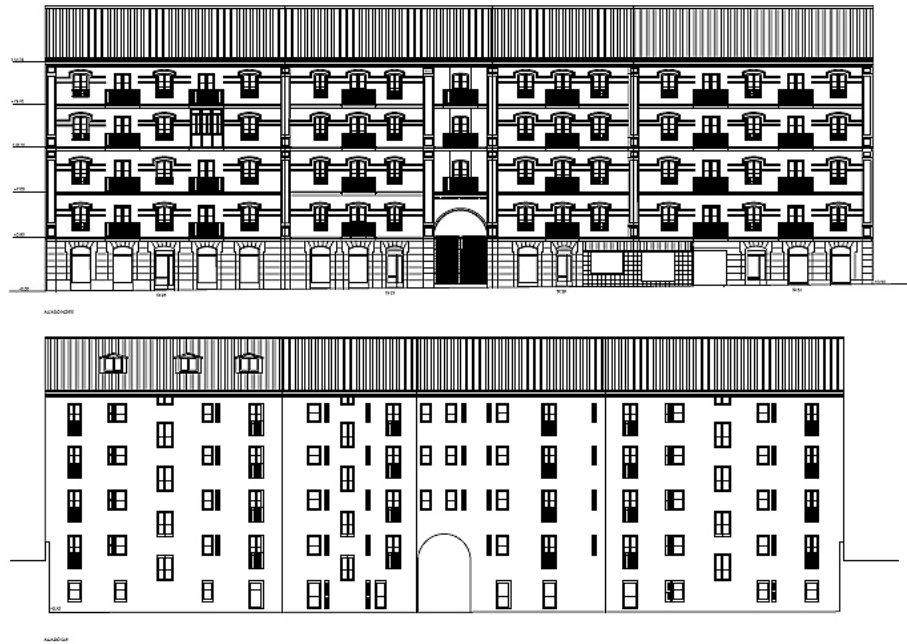


PLANT UNDER COVER



PLANT UNDER COVER


NORTH AND SOUTH FACADES



OUTSIDE





 **sestaOBERRI**









COMMON ELEMENTS







INSIDE









REFURBISHMENT



Refurbishment begins with the demolition and emptying inside to keep the structure of the building. It is not possible to knock it down because it's protected as historic-artistic heritage of the municipality of Sestao.

SOLUTION

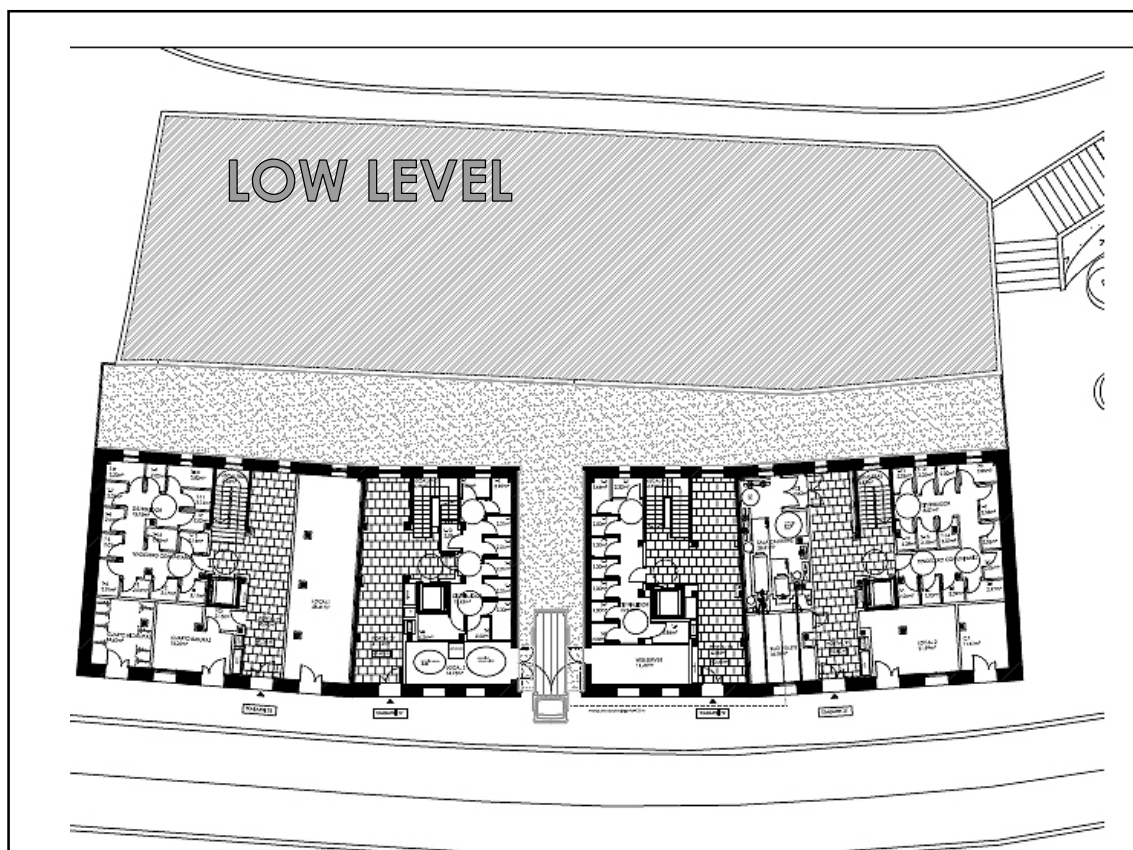
More dwellings than the original. 47 in new project and 43 in the original building.

Emptying total building keeping only facades, structure and subdivision in four portals.

New distribution of housing adapted to current regulations: habitability, accessibility, etc ...

Search for natural cross ventilation in all homes.

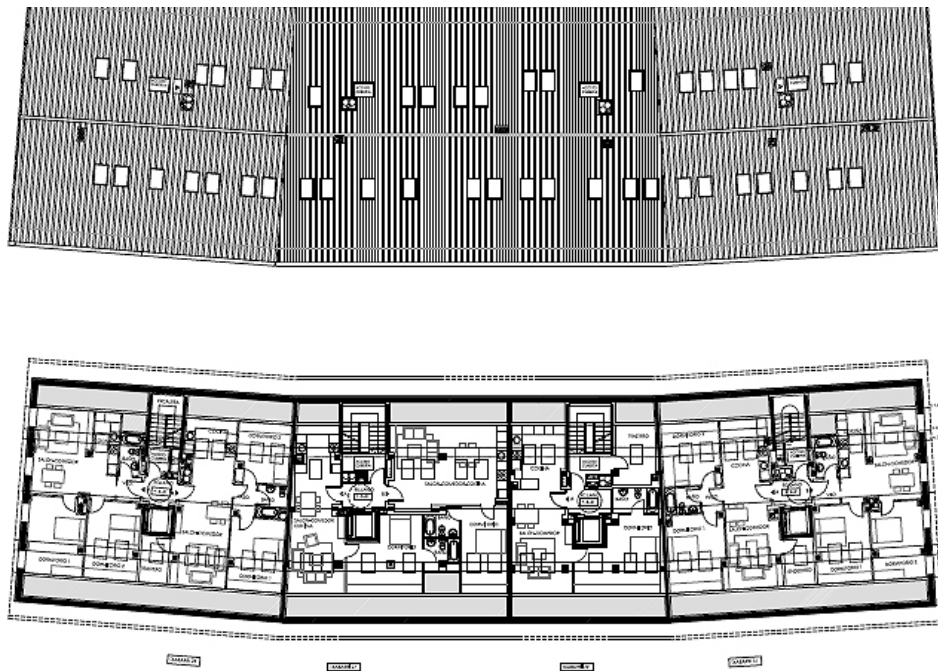
Opening holes in side walls.



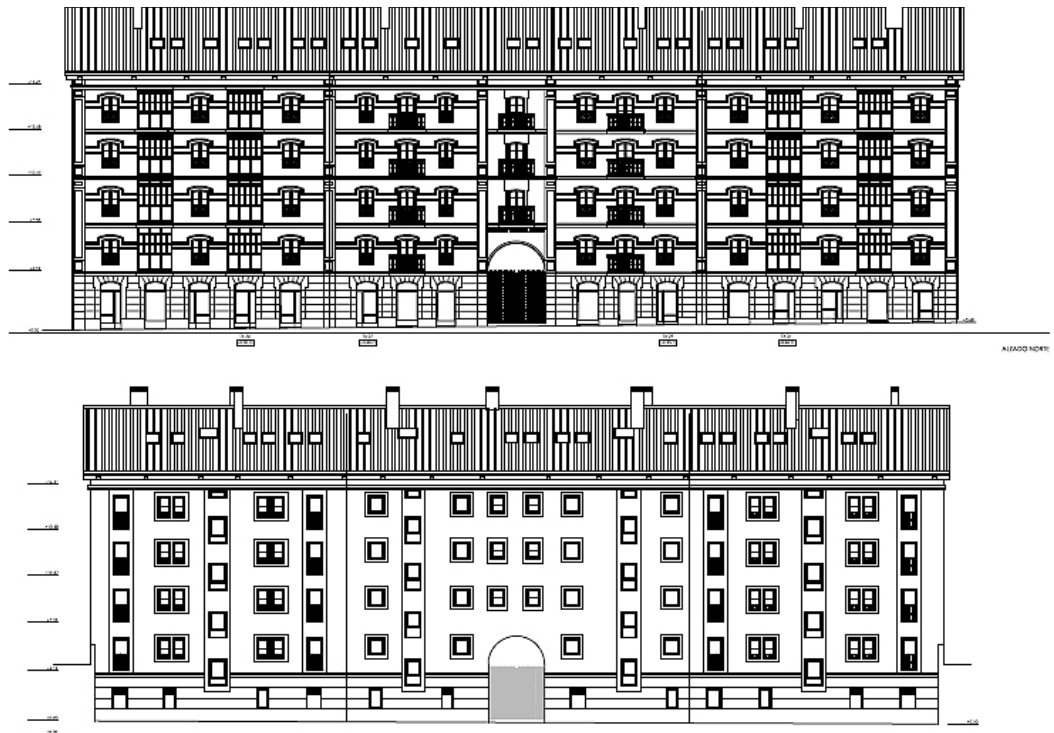
FIRST FLOOR AND TYPE FLOOR



FLOOR UNDER COVER AND COVER


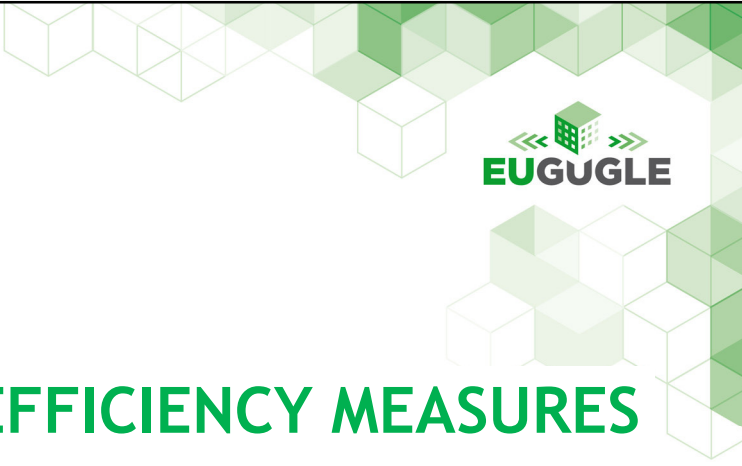
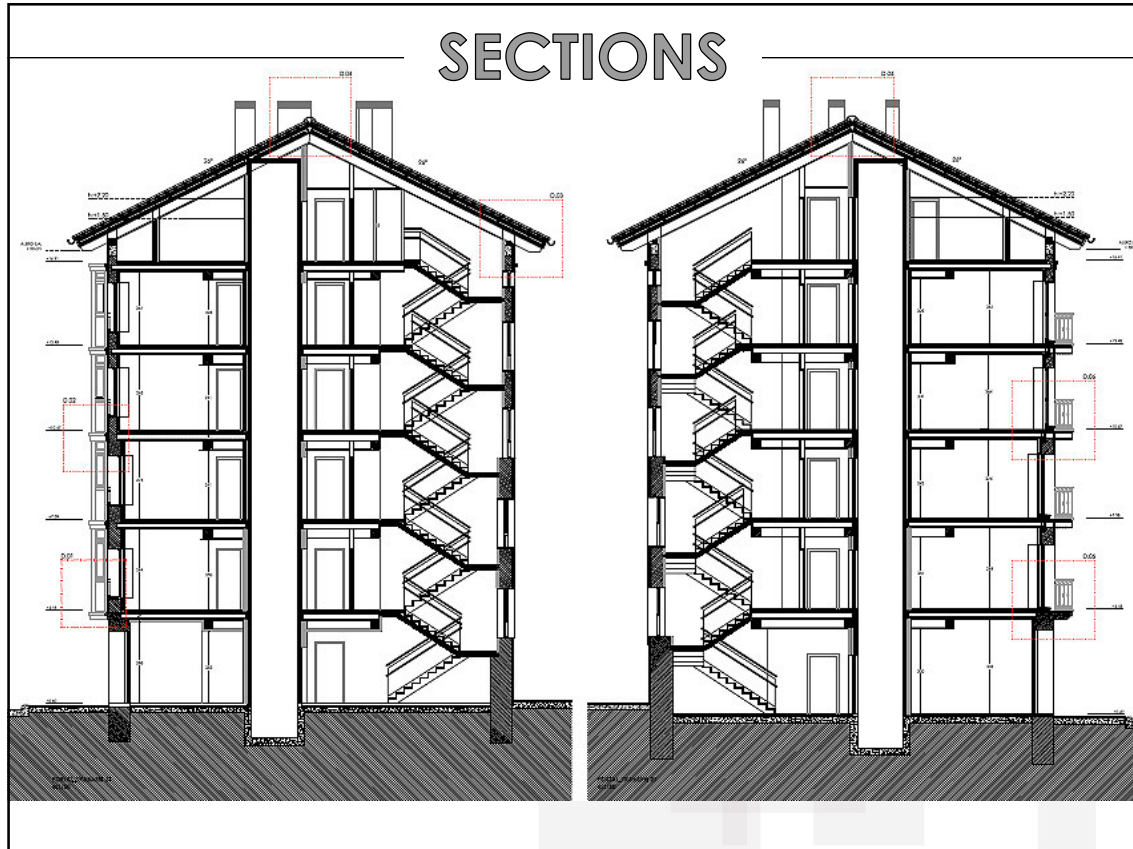


NORTH AND SOUTH FACADES





SIDE FACADES





ENERGY EFFICIENCY MEASURES



BEFORE



AFTER



These are some of the **energy efficiency measures** taken for the refurbishment of this building Txabarri 25-31:

- Maintenance of the wooden structure with recycled materials.
- Thermal insulation in the enclosure
- Installation of a biomass boiler for domestic hot water and heating.
- Reduction of the energy demand with mechanical ventilation and heat recovery.
- Grey water recovery.



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MEASURES FOR IMPROVEMENT

REFURBISHMENT: conservation of wooden structure and existing facades.



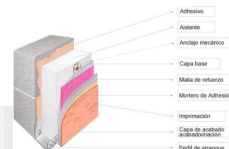
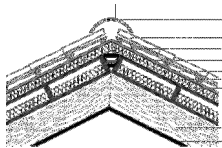
CROSSED VENTILATION: Crossed ventilation in all the dwellings. Reinforcement with mechanical double flow ventilation with heat recovery.

ENVELOPE: 10 cm of exterior insulation

WINDOWS: Wood and low emissivity glass 3 + 3/12/6.

ROOF: Wood structure and 10cm extruded polystyrene above.

FLOORS: wood panels



Adhesión
Acabado
Anclaje mecánico
Caja base
Malla de refuerzo
Mortero de Adhesión
Impermeación
Capa de acabado
Piel de aluminio
Piel de aluminio



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CONSUMPTION OF RAW MATERIALS: Materials that generate the least environmental impact at all stages of their life cycle, from manufacture, installation, use, even deconstruction.

DEMOLITION: Manual and selective to be reused and recycled.

CONSERVATION OF MATERIALS:

wood structure and existing facades are preserved.

USE OF RECICLABLE MATERIALS WITH

ENVIROMENTALLY SEAL: wood panels, plasterboard partitions, mineral wool insulation, wood windows, biomass bowler,



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ENERGY CONSUMPTION:

Two centralized biomass boilers:

They feed with pellets and CO2 emissions are reduced.

Individual meters for regulation of consumption

Programmable thermostats.



Elevators with regenerative systems

that recover the excess energy from the elevator.

On motion detectors for lighting and **energy-saving lamps** in public areas of the building.

Appliances with energy rating A +.



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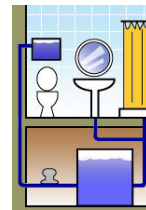
WATER CONSUMPTION

Individual meters.

System to recover greywater from showers and toilets to reuse in filled cisterns.

Toilet with reduced water tank and flushing options.

Thermostatic faucets, pressure reducers, ...



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OTHER ACTIONS

- Implementing Bicycle quarter arises on the ground floor of number 25 to promote the use of bicycles.
- Use phase: monitoring system, training and awareness of owners and tenants, maintenance plan.



EUGUGLE



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ENERGY RATING



Certificación Energética de Edificios Indicador kgCO ₂ /m ²	Edificio Objeto	Edificio Referencia
 13.5 A 8.5-10.7 B 10.7-16.6 C 16.6-25.5 D >25.5 E F G	1.2 A	24.9 D
Demanda calefacción kWh/m ²	C 28,7	E 62,3
Demanda refrigeración kWh/m ²	-	-
Emisiones CO ₂ calefacción kgCO ₂ /m ²	A 1.2	E 19,9
Emisiones CO ₂ refrigeración kgCO ₂ /m ²	-	-
Emisiones CO ₂ ACS kgCO ₂ /m ²	A 0,0	D 5,0



- **BEFORE REFURBISHMENT → ENERGY RATING E:**

CO₂ emissions: 46.1 kg CO₂ / m²

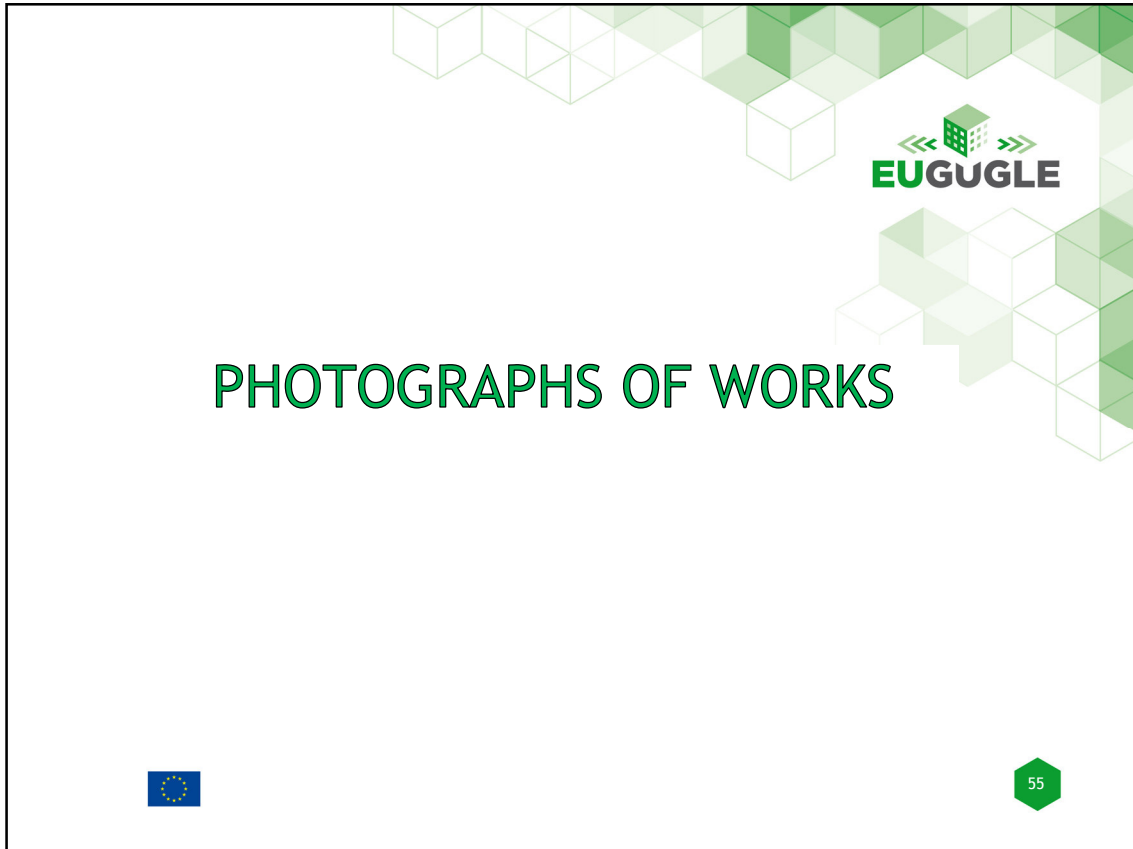
Heating demand: 75,6kWh / m²

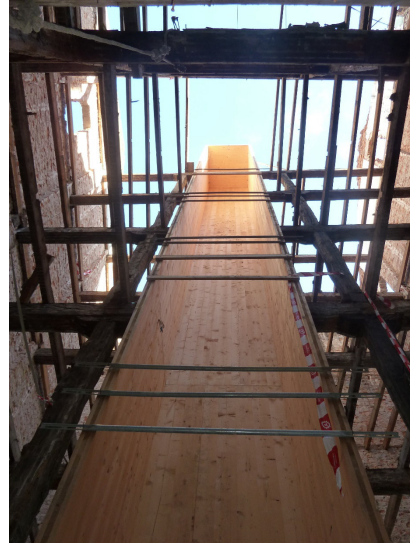
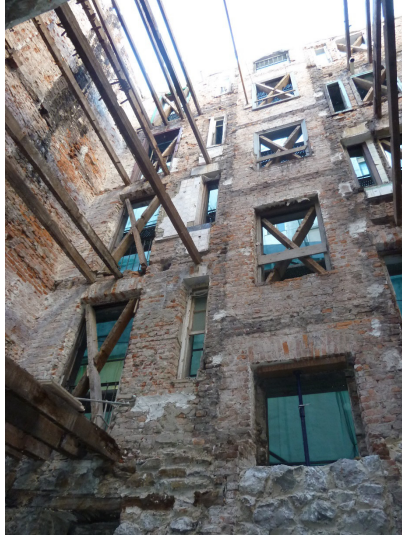
- **AFTER REFURBISHMENT → ENERGY RATING A:**

CO₂ emissions: 1.2 kg CO₂ / m²

Heating demand: 28.70 kWh / m²









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Lessons learned

- Our first intention was to act in a integral refurbishment of a property through a public-private partnership with private owners offering some subsidies by intervene energetically in its buildings.
- With the economic situation of global crisis, we had to bring together the few owners who could deal with the rehabilitation of its building in a portal (14 homes) 4 portals as the other 3 sites (33 new housing) as public housing to be able to sell them.
- The purchase of 33 new housing by applicants of public housing in the Basque country has facilitated the financing of the energy refurbishment of this building.
- Our funding formula in this case was:
BUY OLD HOUSE, RETROFIT BUILDING AND SELL HOUSE RENOVATED WITH ENERGY EFFICIENCY CRITERIA



Thank you!
Danke
!Gracias!



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