



ComActivate

Enabling community action for energy sufficiency

Urban Building Energy Models: from strategic vision to community engagement

OPENGELA: case study in the Basque Country

Development



Escola Tècnica Superior
d'Arquitectura del Vallès

UNIVERSITAT POLITÈCNICA DE CATALUNYA



cíclica
SPACE · COMMUNITY · ECOLOGY

Promotion



EUSKO JAURLARITZA
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OPENGELA

DEFINE THE STRATEGIC VISION

CASE STUDY 1

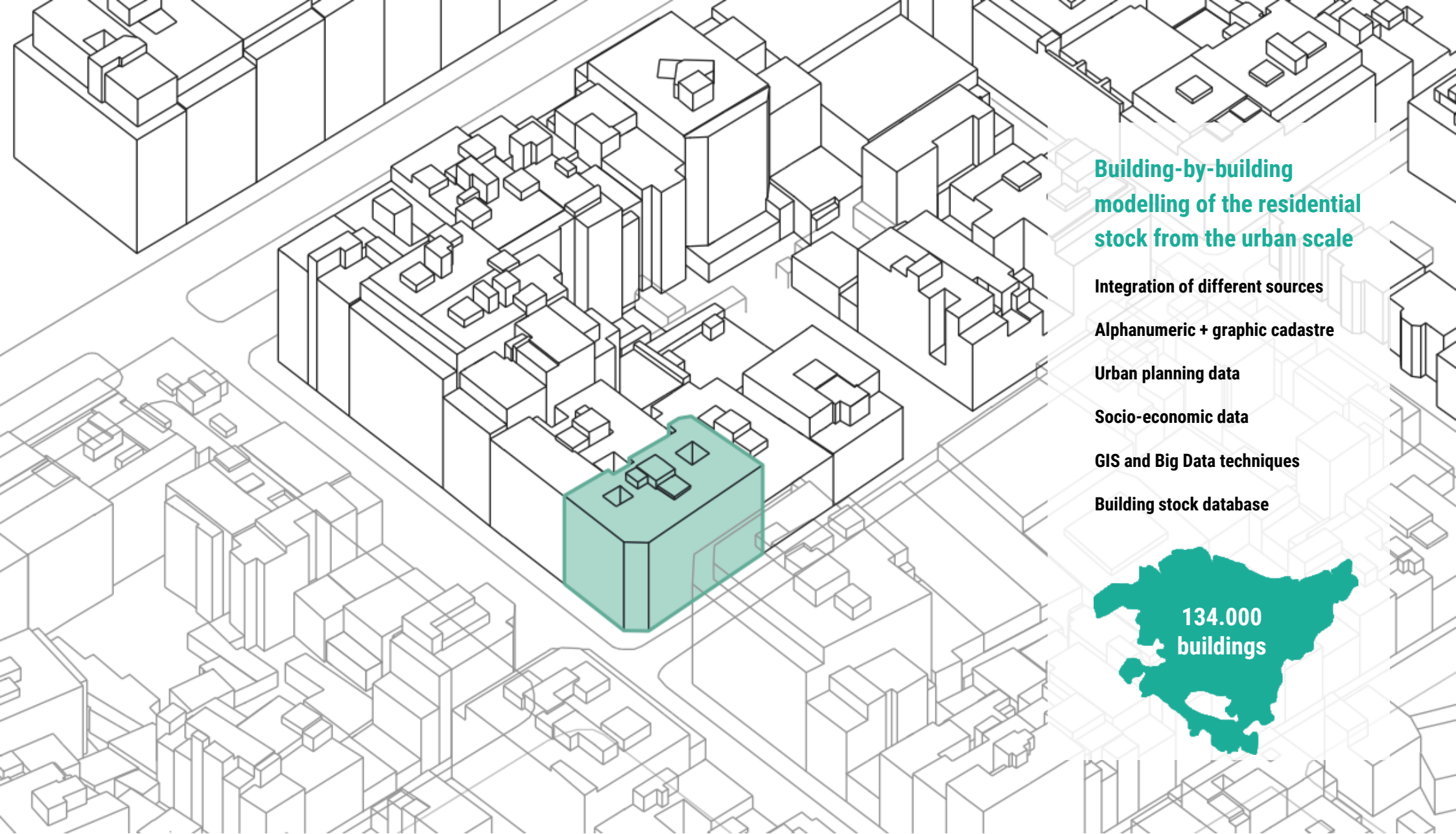
LONG-TERM ACTION PLAN FOR THE IMPROVEMENT OF ENERGY EFFICIENCY IN THE BASQUE COUNTRY'S BUILDING STOCK

Development

Escola d'Arquitectura del Vallès de la Universitat Politècnica de Catalunya
Cíclica [space · community · ecology]

Promotion

Dirección de Planificación Territorial y Agenda Urbana
Departamento de Planificación Territorial, Vivienda y Transportes del Gobierno Vasco



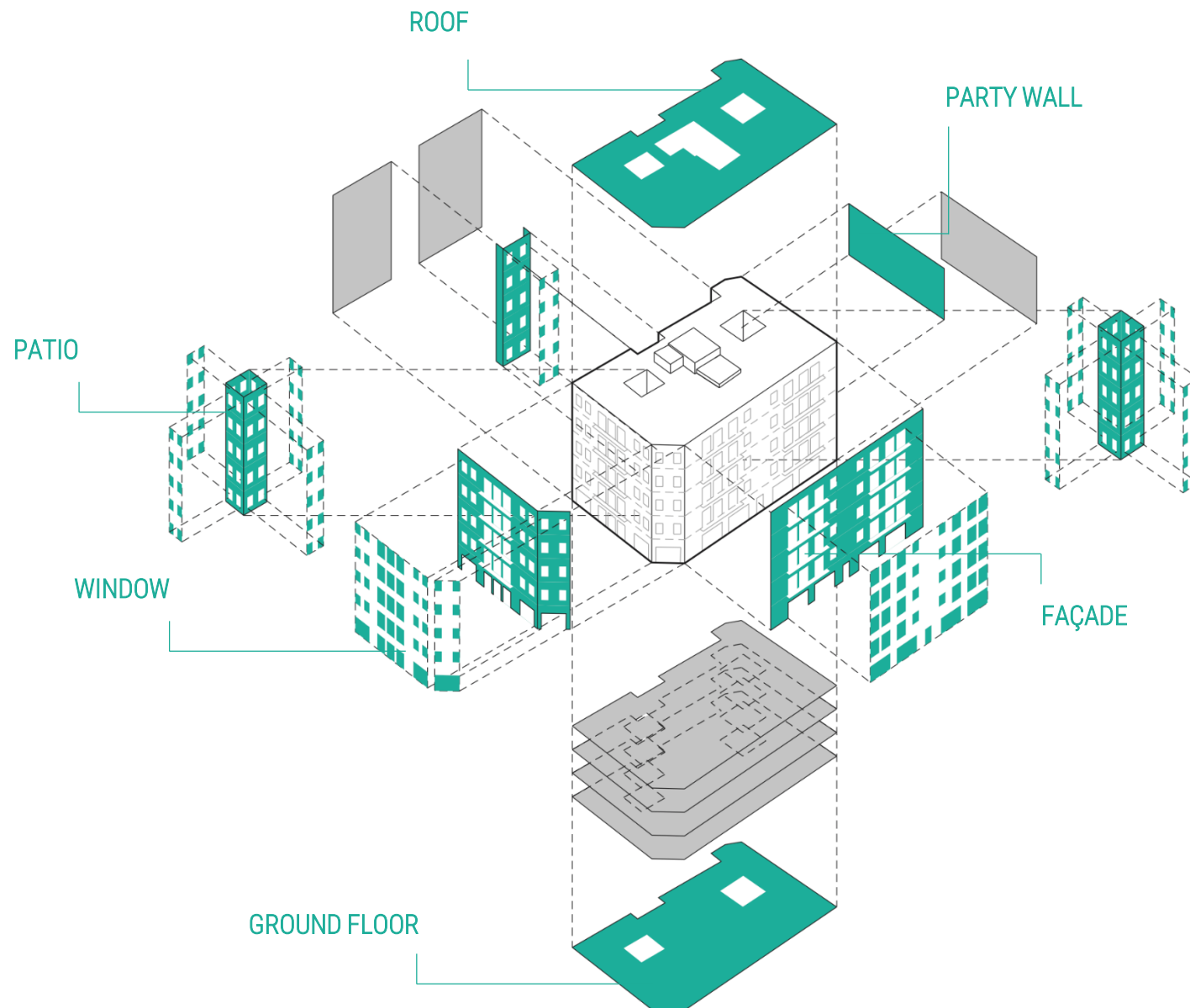
**Building-by-building
modelling of the residential
stock from the urban scale**

- Integration of different sources
- Alphanumeric + graphic cadastre
- Urban planning data
- Socio-economic data
- GIS and Big Data techniques
- Building stock database



Urban Building Energy Models (UBEM): a new generation of tools

Information generated at urban scale



**Detailed description
of each building**

3D virtual model (without archetypes)

Horizontal envelope data

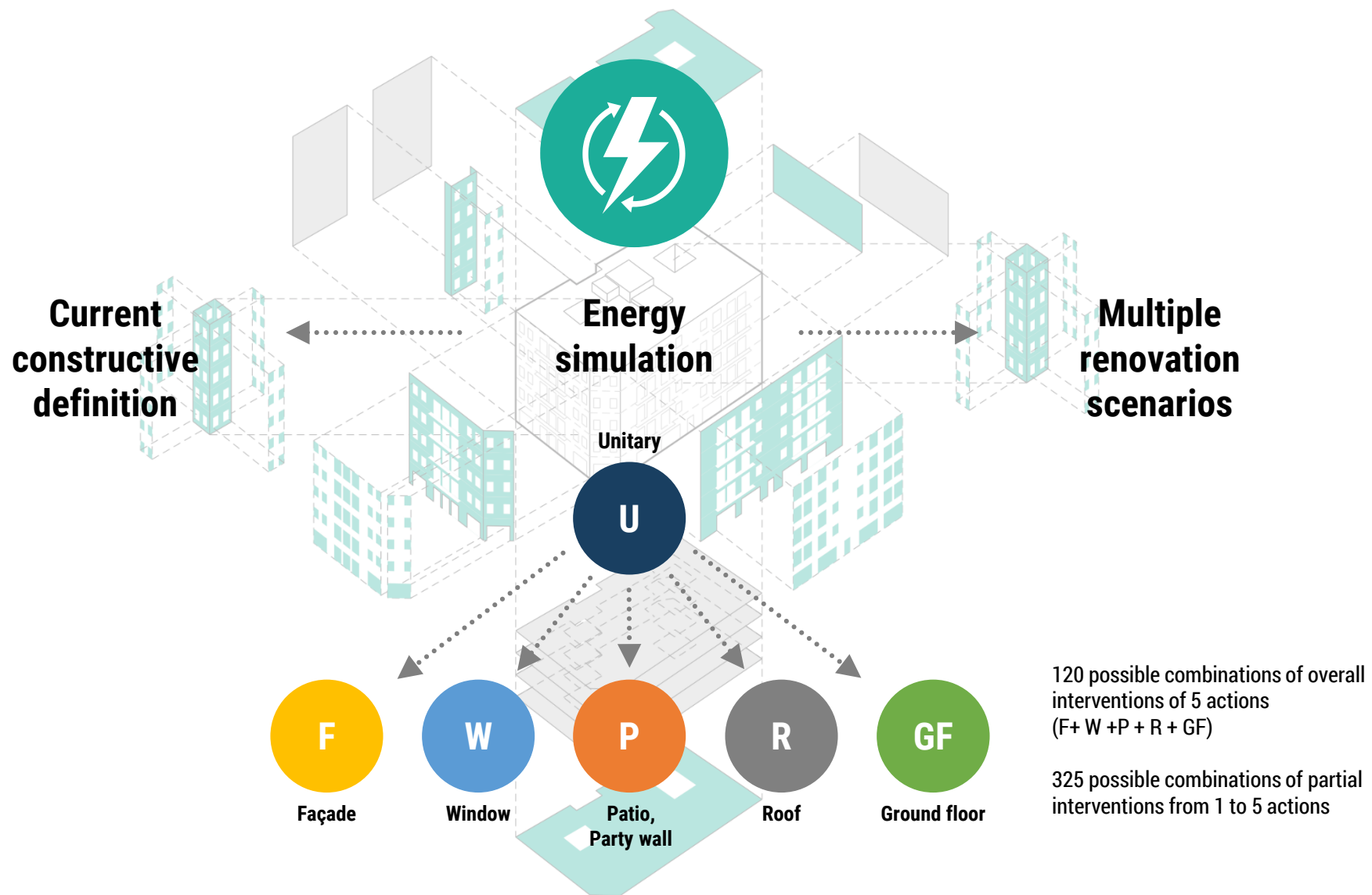
Vertical envelope data

Use data for each floor

High level of detail (LoD)

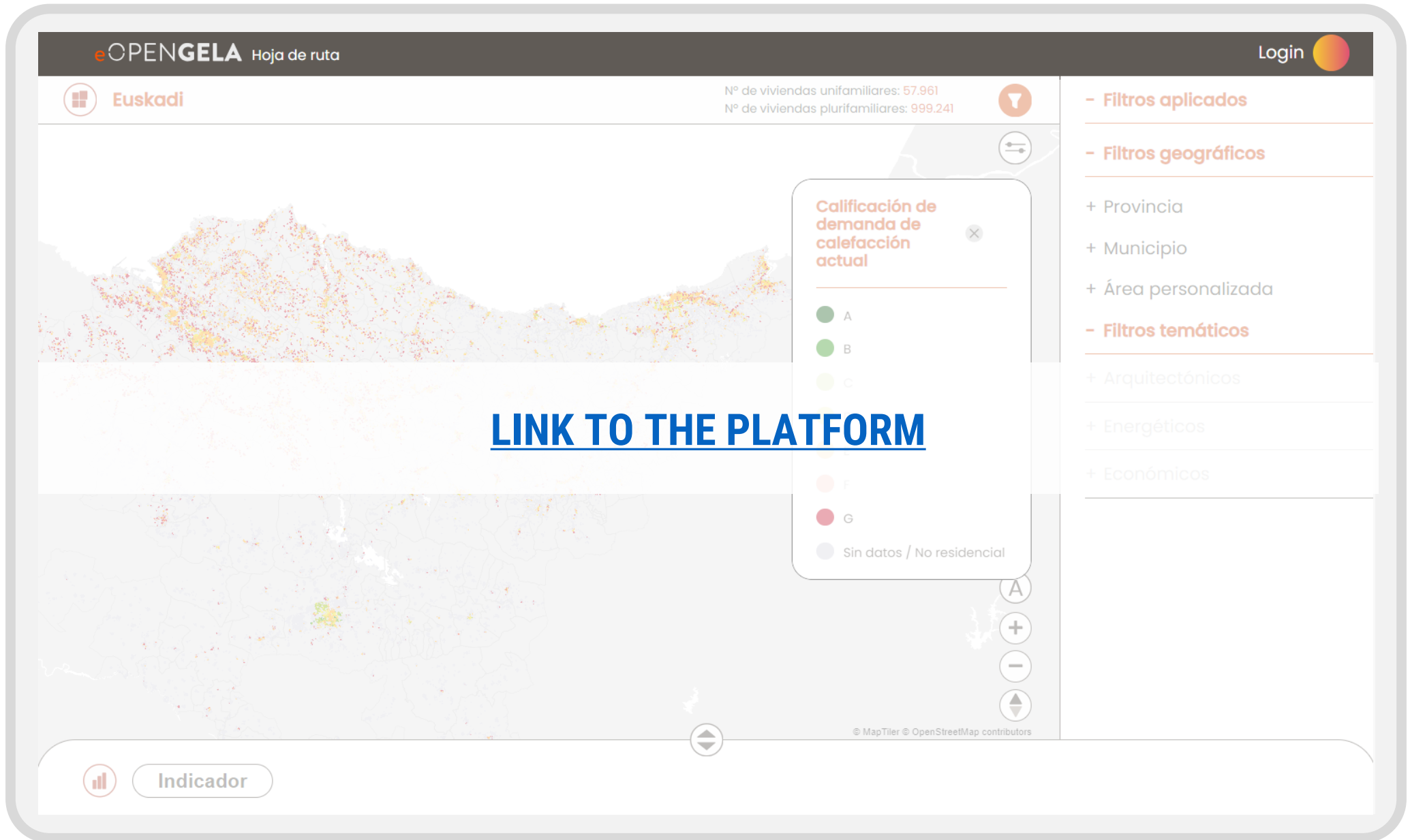
UBEM: Building-by-building approach

Information generated at urban scale



UBEM: Potential renovation scenarios

Information generated at urban scale



BETTER Stock: Regional roadmap tool

Cadastral reference	District	Municipality	Order of intervention					Moment of intervention					Heating demand of the building							Reduction on heating demand	
			1	2	3	4	5	1	2	3	4	5	PRE	1	2	3	4	5	POST	Final	Acumulada
184381008	Txonta	Eibar	C	F	P	V		2021,25	2023,00	2027,75	2032,75	0,00	81.779	70.324	56.918	27.197	18.678	-	18.678	-77,2%	-63,7%
184381015	Txonta	Eibar	C	P	F	V		2021,00	2023,25	2026,50	2031,75	0,00	100.457	93.515	66.427	49.899	19.526	-	19.526	-80,6%	-64,7%
184381021	Txonta	Eibar	C	F	P	V		2021,25	2022,75	2024,75	2027,00	0,00	45.637	36.568	25.048	16.849	9.921	-	9.921	-78,3%	-71,3%
184381050	Txonta	Eibar	C	F	P	V		2021,25	2023,25	2025,25	2027,25	0,00	65.510	49.870	30.790	25.108	13.563	-	13.563	-79,3%	-72,0%
184381054	Txonta	Eibar	C	F	P	V		2021,50	2023,00	2027,00	2030,75	0,00	56.432	42.221	36.578	15.973	12.416	-	12.416	-78,0%	-67,6%
184381055	Txonta	Eibar	F	C	P	V		2021,50	2022,75	2024,25	2026,25	0,00	38.624	26.393	16.856	12.326	8.553	-	8.553	-77,9%	-72,9%
184381056	Txonta	Eibar	C	F	P	V	S	2021,25	2023,50	2026,50	2029,50	2033,25	49.639	42.522	30.642	24.832	17.177	15.977	15.977	-67,8%	-58,2%
184381057	Txonta	Eibar	C	F	P	V		2021,50	2023,75	2026,50	2029,50	0,00	37.571	30.329	21.208	17.118	11.290	-	11.290	-70,0%	-61,0%
184381058	Txonta	Eibar	C	F	P	V		2021,50	2023,75	2026,50	2029,50	0,00	37.734	30.059	21.025	17.056	11.290	-	11.290	-70,1%	-61,3%
184381063	Txonta	Eibar	C	F	P	V		2021,25	2023,25	2027,25	2031,25	0,00	92.276	76.166	58.072	32.423	21.039	-	21.039	-77,2%	-65,6%
184381064	Txonta	Eibar	C	F	P	V		2021,25	2023,00	2025,25	2027,75	0,00	65.718	50.087	35.675	22.948	14.286	-	14.286	-78,3%	-70,9%
184381065	Txonta	Eibar	C	F	P	V		2021,25	2022,75	2026,00	2029,25	0,00	64.871	56.158	41.429	24.460	15.470	-	15.470	-76,2%	-66,5%
184381072	Txonta	Eibar	C	F	P	V		2021,50	2024,00	2026,75	2029,75	0,00	39.962	33.097	22.265	19.038	12.065	-	12.065	-69,8%	-60,2%
184381168	Txonta	Eibar	C	V	P	F		2021,25	2026,50	2032,00	2035,50	0,00	51.378	48.521	30.326	26.696	19.634	-	19.634	-61,8%	-46,0%
184381192	Txonta	Eibar	C	F	P	V		2021,50	2023,75	2026,50	2029,75	0,00	76.086	61.069	42.489	30.051	18.359	-	18.359	-75,9%	-65,8%
184381203	Txonta	Eibar	F	C	V			2022,50	2025,00	2038,25	0,00	0,00	95.952	70.893	58.066	24.372	-	-	24.372	-74,6%	-51,3%
184381551	Txonta	Eibar	C	F	V			2021,50	2025,25	2031,75	0,00	0,00	26.205	21.580	13.395	8.176	-	-	8.176	-68,8%	-56,9%
187989035	Lasarte	Lasarte-Oria	C	F	V	S		2021,00	2024,00	2032,75	2039,50	0,00	323.864	301.477	210.782	52.845	46.934	-	46.934	-85,5%	-62,5%
187989036	Lasarte	Lasarte-Oria	C	F	V			2021,50	2023,75	2030,00	0,00	0,00	159.996	129.563	91.438	24.904	-	-	24.904	-84,4%	-69,5%
187989037	Lasarte	Lasarte-Oria	C	F	V			2021,50	2025,00	2035,00	0,00	0,00	86.270	76.198	56.065	19.478	-	-	19.478	-77,4%	-54,3%
187990135	Lasarte	Lasarte-Oria	C	F	V			2021,50	2025,00	2034,50	0,00	0,00	430.103	357.464	242.271	43.994	-	-	43.994	-89,8%	-65,2%
188697003	Caballo Blanco	Pasaia	C	F	V			2021,75	2026,25	2038,75	0,00	0,00	62.301	54.300	39.610	12.902	-	-	12.902	-79,3%	-49,5%
188697004	Caballo Blanco	Pasaia	C	F	V			2021,75	2026,25	2038,75	0,00	0,00	116.847	100.866	71.560	18.904	-	-	18.904	-83,8%	-52,4%
188697010	Caballo Blanco	Pasaia	C	F	V			2021,75	2026,00	2038,00	0,00	0,00	219.405	187.464	131.040	30.635	-	-	30.635	-86,0%	-55,5%
188697017	Andonaegi	Pasaia	C	F	V			2021,00	2023,75	2032,50	0,00	0,00	69.050	66.487	48.482	16.331	-	-	16.331	-76,3%	-56,1%
188697034	Poblado	Pasaia	F	C	V	S		2022,00	2023,50	2026,00	2030,00	0,00	30.013	16.744	12.549	8.149	7.513	-	7.513	-75,0%	-69,2%
188697035	Poblado	Pasaia	F	C	V			2022,00	2023,75	2026,25	0,00	0,00	29.246	14.527	11.564	6.780	-	-	6.780	-76,8%	-71,3%
188697036	Poblado	Pasaia	F	C	V	S		2021,75	2023,25	2025,75	2029,50	0,00	30.794	19.184	12.270	8.389	7.747	-	7.747	-74,8%	-69,6%
188697037	Poblado	Pasaia	F	C	V	S		2022,25	2025,00	2029,25	2035,50	0,00	46.904	27.680	17.133	10.782	9.837	-	9.837	-79,0%	-69,6%
188697038	Poblado	Pasaia	F	C	V	S		2022,00	2024,25	2027,75	2033,00	0,00	41.043	24.278	15.401	9.845	9.046	-	9.046	-78,0%	-70,4%
188697039	Poblado	Pasaia	C	P	F	V	S	2021,50	2022,25	2023,75	2026,50	2029,50	31.186	24.204	23.541	15.905	10.999	10.288	10.288	-67,0%	-60,8%
188697040	Poblado	Pasaia	C	P	F	V	S	2021,50	2022,25	2023,75	2026,50	2029,50	30.988	23.985	23.365	15.793	10.930	10.239	10.239	-67,0%	-60,8%
188697041	Poblado	Pasaia	F	C	V	S		2022,00	2024,00	2027,25	2032,25	0,00	38.142	23.353	14.481	9.554	8.755	-	8.755	-77,0%	-70,0%
188697046	Andonaegi	Pasaia	C	V	F			2021,00	2025,75	2032,75	0,00	0,00	84.829	83.063	40.019	22.595	-	-	22.595	-73,4%	-57,3%
188697047	Andonaegi	Pasaia	C	F	V			2021,00	2023,25	2030,50	0,00	0,00	59.664	57.129	41.822	14.631	-	-	14.631	-75,5%	-59,1%
188697049	Andonaegi	Pasaia	C	F	V			2021,00	2023,25	2030,50	0,00	0,00	60.588	58.082	42.560	14.912	-	-	14.912	-75,4%	-59,0%
188697050	Andonaegi	Pasaia	C	F	V			2021,00	2023,25	2030,50	0,00	0,00	60.119	57.612	42.160	14.710	-	-	14.710	-75,5%	-59,1%
188697051	Andonaegi	Pasaia	C	F	V			2021,00	2023,25	2030,50	0,00	0,00	60.336	57.829	42.382	14.869	-	-	14.869	-75,4%	-59,0%

Potentialities: Building-by-building roadmap

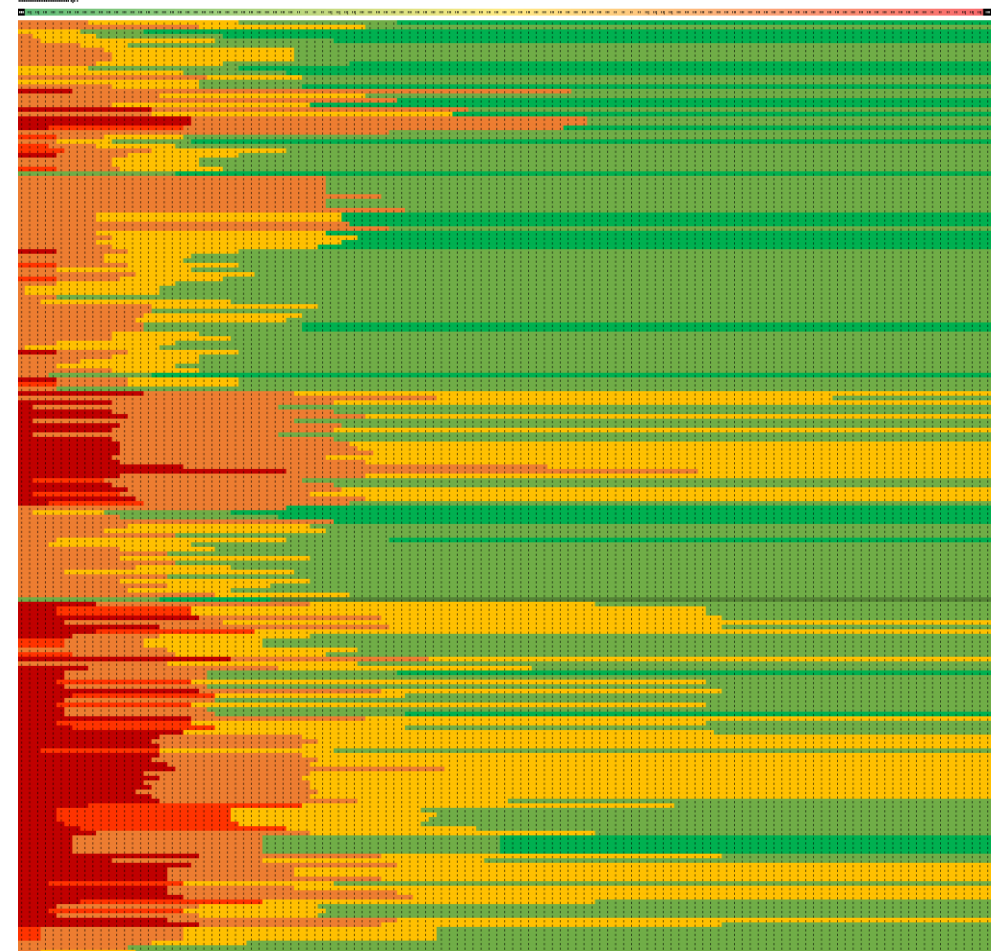
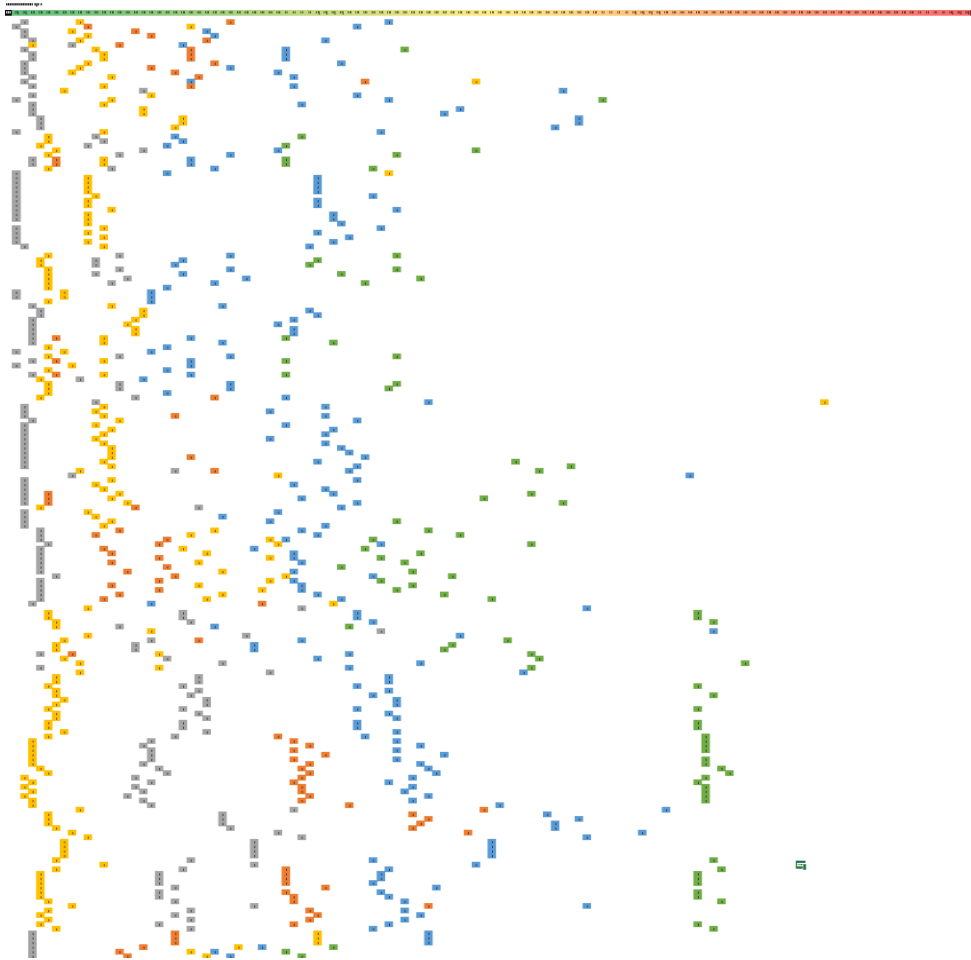
BETTER Stock: Regional roadmap tool

2021

2050

2021

2050



Potentialities: Regional roadmap

BETTER Stock: Regional roadmap tool

ENGAGE THE COMMUNITY

CASE STUDY 2

E-OPENGELA | WEB PLATFORM TO ENGAGE NEIGHBOURS

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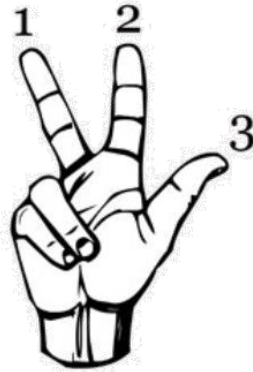
Hagamos un salto de **calidad!**

[LINK TO THE PLATFORM](#)

eOPENGELA es una plataforma de acompañamiento en las comunidades vecinales en la rehabilitación de sus edificios. Te guiará en la rehabilitación de tu hogar, a través de un diagnóstico de tu edificio a través del cual se propondrá un Plan de rehabilitación, un Plan de acompañamiento y herramientas de financiación.



BETTER Communities: Activation and engagement tool



To activate the renovation of the residential stock, it is necessary to...

1

**Create reliable models
to improve the information
of the building stock**

2

**Define a clear strategic vision
at mid and long term
among all levels**

3

**Engage the neighbourhood
community**

To conclude...



ComActivate

Enabling community action for energy sufficiency

Thank you!

Ander Bilbao

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Work performed within the research project conducted by Cíclica [space · community · ecology] and the Escola d'Arquitectura del Vallès (Universitat Politècnica de Catalunya), promoted by the Directorate for Territorial Planning and Urban Agenda of the Department of Territorial Planning, Housing and Transport of the Basque Government.

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