MORE—
CONNECT

DEVELOPMENT AND ADVANCED PREFABRICATION OF INNOVATIVE, MULTIFUNCTIONAL BUILDING ENVELOPE ELEMENTS FOR

MODULAR RETROFITTING AND SMART CONNECTIONS.

Huygen INSTALLATIE ADVISEURS

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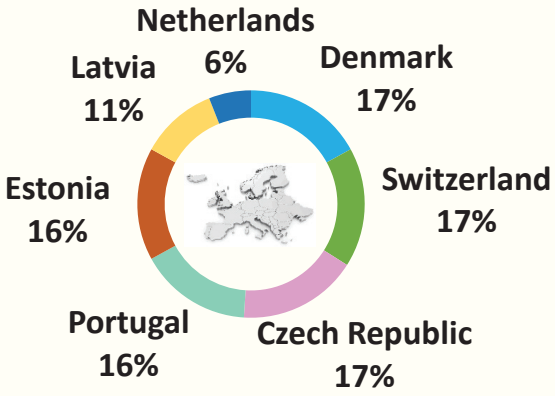
Participants of project MORE-CONNECT are aiming to find an integral solution for deep renovation towards **nearly Zero Energy Building (nZEB)** for reasonable costs. This is to be done by developing **prefabricated**, multifunctional renovation **elements** for the total building envelope (façade and roof) and installation/building services.

In the consortium of MORE-CONNECT there are 7 countries divided in **five geo-clusters** in order to take into account differences in climate conditions, building technologies and cultural aspects.

DARK GLOBE CENERGIA RTU

Stakeholders By Country



Currently typical residential buildings are analyzed to find common structural elements. This influences renovation methodology (total replacement, partial replacement, addition of elements).

There are more than **80 stakeholders** including end-user organizations, product and solution suppliers and decision makers.

Map of European climatic zones

Geo-cluster concept illustrates trans-national areas where strong similarities are found in terms of climate, culture, construction typologies and other factors. Five geo-clusters are represented in project MORE-CONNECT:

Legend
Geo-cluster 1
Geo-cluster 2
Geo-cluster 3
Geo-cluster 4
Geo-cluster 5
Geo-cluster 6
Geo-cluster 7

● MC MoreConnect country

Country specific typical **residential buildings** were chosen in order to gather initial data for comparison of the housing sector.

Further on in research more detailed approach to economic feasibility will be taken into account by evaluating the amount of typical buildings to be renovated.

Building envelope U-values before and after renovation:

		U-values, W/(m²·K)					
		GC 1	GC 2		GC 3	GC 5	GC 6
		Denmark	Estonia	Latvia	Czech Republic	Portugal	Netherlands
Before renov.	U_{wall}	0.50	1.10	1.10	0.80	0.92	1.90
	U_{roof}	0.40	1.00	1.25	1	0.94	2.80
	U_{floor}	0.50	0.60	0.49	1.28	0.78	2.00
	U_{window}	3.10	1.60	2.56	1.12	3.10	2.80
	U_{door}	3.10	1.60	2.56	3.46	3.10	2.50
After renov. (ZEB)	U_{wall}	0.14	0.08	0.08	0.21	0.47	0.18
	U_{roof}	0.11	0.06	0.08	0.15	0.32	0.15
	U_{floor}	0.34	0.15	0.11	0.27	0.86	0.29
	U_{window}	0.70	0.60	0.81	1.00	2.40	1.60
	U_{door}	0.70	0.80	0.81	1.00	2.40	2.00

Research has been undertaken to find solutions for modular panel connections to provide safety, ease of installation and durability of construction. Advanced geomatics will be used to design optimal displacement of panels and location of connection points.

U-values and thus **energy demand** before and after renovation vary greatly between countries due to differences in climate conditions and types of construction methods.

The remaining demand is to be met by integration of **PV panels** and solar **collectors**.

Examples on **integrated renewables** have been studied to find best solutions for building applied photovoltaic (BAPV), as well as building integrated solar thermal system (BISTS).

The benefits of building integration is the savings that occur by replacing two separate systems (e.g. wall and collector) with one system with both functions.

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