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Environmental Investment Fund Ltd | Latvia | www.lvif.gov.lv



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proKlima GbR | Germany | www.proklima-hannover.de



End Use Efficiency Research Group, Politecnico di Milano | Italy | www.eerg.it



Burgas Municipality | Bulgaria | www.burgas.bg

Cover photo: Nieuw Zuid development in Antwerpen | Belgium © Studio Associato Secchi-Viganò

Opportunities and benefits

To bring about the required changes in behaviour and skills to deliver nearly zero energy buildings across Europe, each sector of the construction industry will need to play its part. The PassREG project aims to support the industry by providing a range of guidance and training tailored to the needs of each sector. Learning from regions that have successfully implemented ambitious targets will help to inform proven methods for delivering low energy buildings in line with EU directives. This will provide policy makers and local authorities with clear mechanisms for target setting and leading by example through their own construction projects.

Economic advantages

Various models for financing nearly zero energy projects are explored within the project and disseminated to provide confidence to clients, financiers and developers that the Passive House Standard offers viable, affordable, future proof construction solutions that also make the use of renewable energies feasible. The reduced running costs of such buildings will provide better financial security to occupants, also inevitably making rent payments more reliable and giving building owners longer term assurances of their financial investments.

An early development in 2000 of 32 Passive House dwellings had an average energy demand of 75 kWh/m²a, of which the space heating demand was 12 kWh/m²a. Each house was sold with a share in a local wind energy plan that effectively covered the necessary energy demand of the dwelling.



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Opportunities and benefits

Getting involved

PassREG offers opportunities to visit demonstration buildings and discuss regional experiences with those involved via international study tours and workshops. Key project findings are being made available online and made public through events such as the International Passive House Conference, the International Passive House Days and a wide variety of regional events. The PassREG project also raises awareness of market opportunities for products that will be key in the delivery of ultra-low energy buildings.

Training

To help upskill designers and construction companies, courses will be tailored by the project partners for local conditions in order to offer training to the architects and engineers who must design the buildings and to the tradespeople or construction site personnel responsible for their implementation, allowing Passive House designs to be achieved in practice throughout Europe.

The International Passive House Conference is the largest, most significant event of its kind and serves as the key platform for the presentation of PassREG findings and the exchange of related ideas and experiences. The Conference reaches out to the entire range of construction experts as well as all those wishing to build in a sustainable and cost-effective way. A variety of side events such as a Passive House basics course, a manufacturers workshop, a component exhibition and Passive House tours round out the framework programme.



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PassREG

Building for the energy revolution

Passive House Regions with Renewable Energies



An informational pamphlet

Passive House regions

Meeting our energy needs sustainably into the future requires nothing short of an energy revolution. In terms of our built environment, perhaps the greatest opportunity lies in the promotion of an “energy efficiency first” approach to building, supplemented by renewable energies. Several front runner regions across the EU already successfully support this approach on the basis of the Passive House Standard. Many more aspire to get on board.

By investigating what makes front runner regions so successful as well as by making their successes more accessible, the PassREg project helps aspiring regions become front runners themselves. In the examination of both regional mechanisms and individual construction case studies, a wealth of knowledge will be gleaned to support actors in optimising existing models promoting energy conscious construction and inspiring new ones.

Participating regions

Austria	The Region of Tyrol
Belgium	The Brussels Capital Region The City of Antwerp
Bulgaria	The City of Burgas along with the Cities of Gabrovo, Sofia and Varna
Croatia	The City of Zagreb
France	The Region of Aquitaine
Germany	The Cities of Frankfurt am Main, Hanover and Heidelberg
Italy	The City of Cesena and the City of Aglientu, The Regions of Catania, Foggia, Marche, and Pesaro and Urbino The Government of Sicily
Latvia	The Regions of Rezekne and Vidzeme with the City of Ergli
Netherlands	The Regions of Arnhem-Nijmegen and Gelderland The Cities of Arnhem and Nijmegen
United Kingdom	The Region of Wales

Toward EU energy goals

The EU has set ambitious goals for energy performance in buildings. To meet these goals by the 2020 deadline, many are looking to the Passive House Standard for energy performance in buildings.

Passive House is the basis

An internationally recognised building energy standard, Passive House combines maximal comfort with minimal energy use and life cycle costs. Through a focus on careful planning paired with quality building components, Passive House buildings use an average of 90% less energy than typical building stock – in terms of heating, they require less than 1.5 cubic metres of gas or 1.5 litres of oil per square meter annually. Vast energy savings have also been demonstrated in warm climates where conventional buildings typically require active cooling.

Making renewables feasible

The high levels of energy efficiency reached by Passive House buildings mean that the tiny energy demand that remains can be covered, economically, by a wide variety of renewable energy sources. Such efficient buildings can also do more with the renewables placed on small surface areas – a critical aspect in urban areas where buildings often have restricted roof and facade areas.

Many Passive House buildings make use of renewable energies, e.g. through photovoltaic systems, to cover their remaining energy demand.



Quality assurance

Buildings, whether new build or retrofit, must perform as expected if we are to ensure sustainable energy supply into the future and improve our standard of living in so doing. Proper performance, in turn, can only be ensured if quality in design, construction and the materials chosen is taken seriously.

PassREg builds upon existing Passive House design tools as well as quality assurance procedures and certification criteria for both buildings and components. Through PassREg, these criteria are being optimised for application throughout the EU, guided in part by the monitoring results of select case studies. In addition, PassREg strengthens the appropriate quality assurance infrastructure in partner countries while driving increased availability of qualified materials and products on regional markets.



The energy balance and Passive House design tool known as the PHPP or Passive House Planning Package is perhaps the most accurate energy balance program on the market. It stands as the first step in quality planning for low energy buildings.



The Passive House Institute certifies building components in order to provide quality assurance for high performance, Passive House suitable products and make such products visible on the market. This is an example of the seal awarded to transparent components meeting Passive House criteria.



Buildings meeting Passive House energy efficiency criteria can be certified according to international Passive House criteria. For energy retrofits in which the Passive House requirements cannot be met, EnerPHit certification may be awarded. These certifications stand for quality in high performance construction.

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Training and qualification

Qualified architects, engineers and craftspeople are essential in the successful construction of high performance buildings. Such professionals form the basis of the successes seen in front runner regions having successfully implemented Passive House solutions supplemented with renewables on large scales. Indeed, one of the greatest challenges faced in this regard lies not in technical details but in the training of qualified professionals.

Through PassREg, aspiring regions are being supported in the development of long term training strategies based on the successes of front runners. Courses making use of and building on readily available material for designers and tradespeople are being translated and adapted as needed to fit regional requirements. These offerings, supplemented by a range of informational sessions and forums, will serve as the basis for the general uptake of Passive House training by educational systems as well as by the building sector throughout the EU.

Architects and craftspeople in a Brussels Passive House course are working with a 3D model to get familiar with typical features of Passive House buildings such as suitable connections between a solid wall, concrete floor slab and foundation wall. These participants are learning how to apply PU panels to the exterior wall and how to achieve a continuous, uninterrupted insulation layer between the floor (inside) and the wall (outside).

