Press Release

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Significantly less use of oil, gas and coal, implementation of high energy efficiency combined with renewable energy instead: that is how the existing building stock can become climate-friendly. Photos: (left) new Passive House development in Nidderau, Germany, © Passive House Institute; (right) social housing development to the Passive House standard in Kufstein, Austria. © Neue Heimat Tirol, Härting.

It’s good for the climate! And for us!

Passive House Institute points way to climate-friendly buildings – energy efficiency neglected

Darmstadt, Germany. **The topic of energy efficiency is often woefully neglected in discussions on climate protection. However, buildings-related emissions can only be significantly reduced by consuming less energy for heating and cooling. The Passive House Institute presents its proposed solutions for a climate-friendly building stock in three “building blocks”: A substantially higher level of energy efficiency of buildings; on-site generation of renewable energy; and a change in the political framework conditions. This also means that mediocre quality of energy efficiency measures should no longer receive funding. In Germany, for example, the government has just decided to discontinue the subsidy for new builds of mediocre quality of energy efficiency.**

The majority of the existing buildings, in Germany as well as in many other countries, are of a very low energy-relevant standard and in need of urgent and extensive retrofit. © Passive House Institute

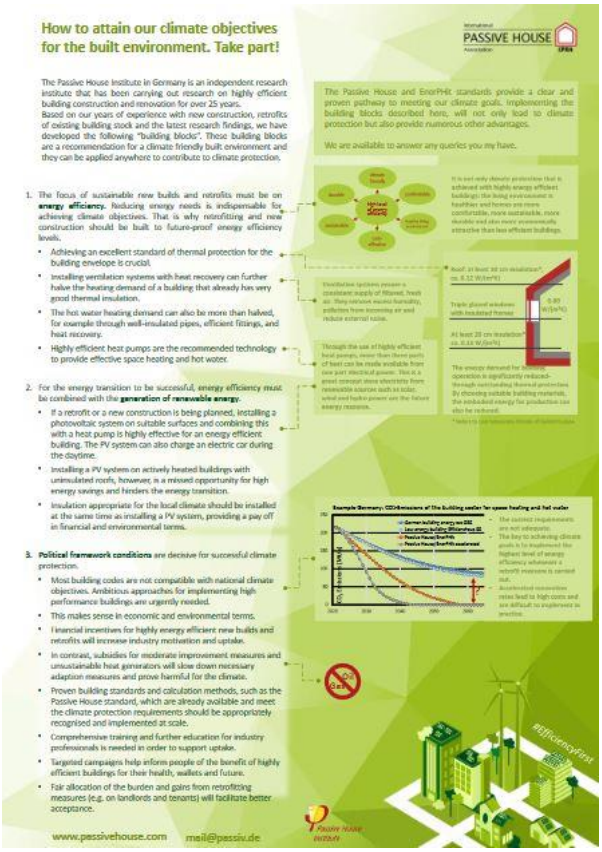
The Passive House Institute has been carrying out research on highly efficient building construction and renovation for over 25 years. According to the research institute, governments can significantly reduce emissions in the building sector through three **building blocks** the institute proposes. This is the only way in which the climate objectives of the Paris Agreement can be achieved for the building sector. At the United Nations Climate Change Conference in 2015 held in Paris, 197 countries adopted this Agreement to protect the climate and avert a climate disaster.

Don’t burn fossils

"Emissions in the building sector are still much too high. We cannot continue to burn fossil fuel such as oil, gas and coal in order to heat our buildings. The building blocks we developed make it possible to implement an existing building stock that will effectively protect the climate and meet the Paris Agreement", explains Dr Jürgen Schnieders of the Passive House Institute.

Building block No. 1: Energy efficiency

#EfficiencyFirst! The Passive House Institute stresses that achieving a **high level of energy efficiency** in new builds and retrofit projects must be a priority. Excellent thermal protection of the building envelope is decisive for this and achievable through a climate-appropriate insulation, among other things. Ventilation systems with heat recovery can further halve the heating demand of these buildings. The hot water demand can be de-creased through the use of well-insulated pipes, efficient fittings and heat recovery. The Passive House Institute recommends highly efficient heat pumps for the provision of heating energy and hot water.



The **building blocks** of the Passive House Institute for climate-friendly existing building stock**:** 1. efficiency, 2. renewable energy, 3. a change in the political framework conditions. © Passive House Institute

Building block No. 2: Efficiency & renewables

The Passive House Institute further explains that for the success of the energy transition, it is necessary to combine the energy efficiency of the building with the on-site production of **renewable energy**. In the case of new buildings and retrofits, a preferably large photovoltaic system should be installed on suitable surfaces. The heat pump can then be operated using this PV system. However, installing a PV system on actively heated buildings with uninsulated roofs, results in a missed opportunity for high energy savings. It also creates a barrier to implementing the energy transition. "Homeowners should therefore insulate their houses first. This is also financially worthwhile", explains Jessica Grove-Smith, co-initiator of the building blocks.

Building block No. 3: Political framework

The **political framework conditions** are also decisive for successful climate protection, continues Grove-Smith. As an example, the Passive House Institute also finds the German building energy act GEG as "incompatible" with the objectives of the Paris Agreement and advocates for more ambitious energy standards. This also makes sense economically. Financial incentives for highly energy efficient new builds and retrofits will increase industry motivation and uptake. "It would be counterproductive if a mediocre level of building efficiency continued to be funded. This also applies for heat generators which are not sustainable", explains Grove-Smith. The Passive House Institute is therefore in favour of ceasing funding for only moderate energy standards. **www.passivehouse.com** >> **Press**>>**Statements**

No *accelerated* retrofitting campaign

At the 25th International Passive House Conference in September this year, the Passive House Institute explained that for retrofits, the most economical solution with regard to total costs was to implement the ambitious EnerPHit standard. The EnerPHit standard was developed by the Passive House Institute for the retrofitting of existing buildings. If the renewal of building components is already planned, then these must be brought up to a future-proof, sustainable standard. By contrast, an *accelerated* retrofitting campaign with faster renewal cycles would be considerably more expensive. What is even more important is that in realistic terms, the designers and tradespeople required to implement this so-called 'wave' at short notice are simply not available, says Dr Jürgen Schnieders. The **30-minute presentation** on the topic is available on YouTube (in German).

With regard to the overall life cycle, highly energy-efficient buildings are more cost-effective than less efficient buildings. A view of the largest Passive House district in Europe, the Bahnstadt Heidelberg, Germany. © PHI

Already existing solutions

Scientifically proven building standards are already available, such as the Passive House standard and the EnerPHit standard, as well as reliable tools for energy balances. In addition, they are consistent with the climate objectives as the research Institute in Darmstadt clarifies. "It is a fact that highly energy efficient buildings protect the climate. At the same time, they offer significantly improved thermal comfort and a healthy living environment. Seen over the entire life cycle, these buildings are also more cost-effective than less efficient buildings. We simply need to implement highly energy efficient buildings on a wide scale", says Schnieders.

Subsidies to end

In Germany, for example, the government has just decided to discontinue the subsidy for new builds of mediocre quality of energy efficiency: The subsidies for new constructions in the category "Effizienzhaus 55" will cease in February 2022. The German government now wishes to promote primarily those measures which generate the maximum possible CO_2 savings and will increasingly provide funding for energy-relevant retrofitting measures. "Now we must ensure also here that only highly energy efficient standards are applied. Otherwise, an opportunity for climate protection will be missed for decades to come", comments Jessica Grove-Smith of the Passive House Institute on this announcement by the government.

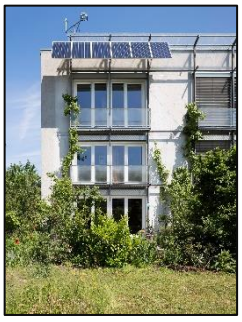
General Information

Passive House buildings

With the Passive House concept the heat loss that typically takes place in buildings through the walls, roof and windows is drastically reduced. This is achieved through high-quality thermal insulation, windows with triple glazing, avoidance of thermal bridges, an airtight building envelope, and a ventilation system with heat recovery. This ensures that Passive House buildings can manage without a *traditional* building heating system. They are called "passive houses" because a major part of their heating demand is met through "passive" sources such as solar radiation or the heat emitted by occupants and technical appliances.

Advantages of Passive House buildings

In a Passive House building the heat is retained for a very long time since it escapes very slowly. For this reason, active heating is needed only during extremely cold days. A very small amount of energy is required in total for providing this remaining heating. In the summer (and also in hot climates), a Passive House building also offers advantages: among other things, the excellent level of insulation ensures that the heat stays outside, therefore active cooling usually isn't necessary in residential buildings. Due to the low energy costs in Passive House buildings, the utility costs are foreseeable - a fundamental principle for affordable homes and social housing. Depending on the condition of the existing building, a Passive House building consumes up to 90 percent less heating energy compared to them and about 75 percent less than an average new construction.



The world's first Passive House building in Darmstadt, Germany celebrated its 30th anniversary in 2021! © Peter Cook

Pioneer project

The first Passive House in the world was built in Darmstadt, Germany, 30 years ago by four private homeowners. Prof Wolfgang Feist was one of them. Ever since the homeowners moved in with their families in 1991, these terraced houses have been regarded as a pioneer project for the Passive House standard. With its newly installed photovoltaic system, this flagship Passive House now utilises renewable energy and received the Passive House Plus certificate for this reason.

Passive House buildings and renewable energy

The Passive House standard and generation of renewable energy directly on-site or near the building is a good combination. The building classes "Passive House Plus" and "Passive House Premium" are available for this supply concept.

Functions of Passive House buildings

Passive Houses buildings for all types of uses now exist everywhere. In addition to residential and office buildings there are also kindergartens and schools, sports halls, swimming pools and factories built as Passive House buildings. The first Passive House hospital in the world is currently being built in Frankfurt am Main, Germany.

Professor Wolfgang Feist © Peter Cook

Passive House Institute

The Passive House Institute with its headquarters in Darmstadt (Germany) is an independent research institute for highly efficient use of energy in buildings. The Institute was founded by Wolfgang Feist 25 years ago in 1996. It holds a leading position internationally with regard to research and development in the field of energy efficient construction. Among other things, Prof Wolfgang Feist was awarded the DBU Environmental Prize in 2001 for developing the Passive House concept.

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