

# 16<sup>TH</sup> INTERNATIONAL PASSIVE HOUSE CONFERENCE 2012

## Master plan for the European Energy Revolution put forth

*On 4 and 5 May 2012, the world's most significant conference on energy efficient construction brought over 1000 experts from 45 countries to Hanover, Germany 2012 to distil concrete solutions for an EU wide energy revolution based on energy efficiency from the vast pool of Passive House experience. Some 40,000 Passive House buildings totalling circa 20 million square metres in area currently offer their users the highest levels of comfort while saving them roughly 240 million euros (approx 320 million dollars) annually in energy costs; these numbers are rising sharply.*

Hanover / Darmstadt, Germany; 9 May 2012 – Cutting national budgets while encouraging growth and reducing unemployment – this is currently the top priority for the EU and governments around the world. How to harmonise these seemingly opposing goals and in so doing produce positive ripple effects was highlighted at the 16th International Passive House Conference in Hanover, Germany. If the new EU Energy Efficiency Directive with the necessary accompanying measures is quickly implemented, it could lead to full employment in many sectors Europe-wide by 2030, which in turn will boost economies and reduce debt.

Over 1000 participants from around the world gathered to discuss these and other pressing issues at this year's Passive House Conference, put on annually by the Passive House Institute. The event is becoming increasingly international; approximately half of the participants in attendance came from non-German speaking countries; South Korea, Japan, the US, the UK, Norway, Belgium and France were particularly well represented. In 16 sessions, 90 speakers outlined their Passive House solutions and experiences. Passive House new builds and retrofits as implemented in a surprisingly wide variety of climates were presented, as were Passive House non-residential buildings ranging from offices to hospitals. Time and again, Passive House is shown to bring about energy savings and thus CO<sub>2</sub> reductions on the order of 80% as compared to typical new builds.

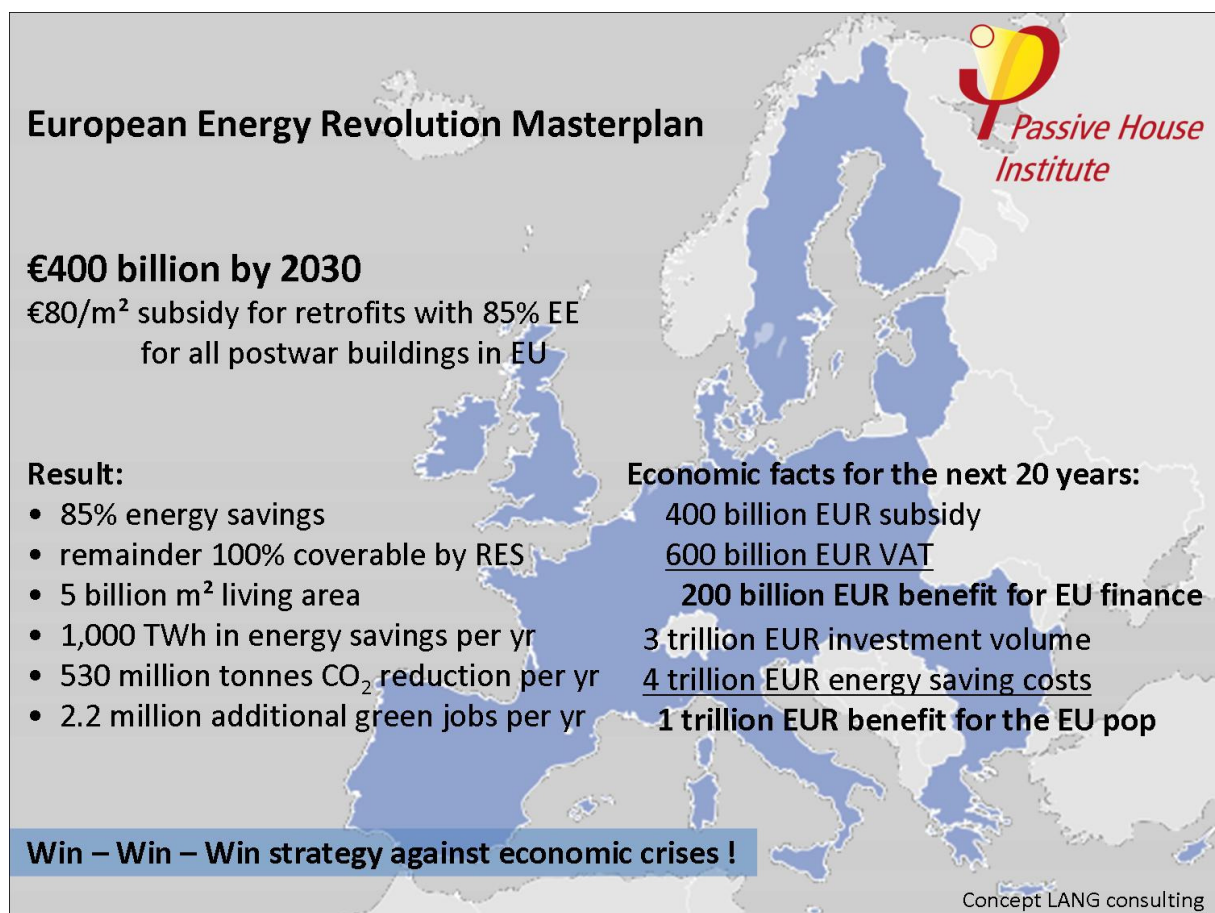


16th International Passive House Conference opening ceremony (Hannover, Germany - 2012); Keynote speaker Dr. Ernst Ulrich von Weizsäcker and Dr. Wolfgang Feist (PHI); Source: PHI/proKlima, Photos: Mirko Bartels

## A master plan for the European energy revolution

Five million square metres of living space in Europe is provided by post-war construction with an average heating demand of 140 kWh/m<sup>2</sup>a to 250 kWh/m<sup>2</sup>a. Prof. Dr. Wolfgang Feist, Director of the Passive House Institute, used the opening of the 16th International Passive House Conference to propose to the EU Commission and Member States an energy revolution from which everyone can benefit in the form of the EU's largest investment programme of the last 60 years.

With financial support of 80 euro per square metre of living space for deep renovations<sup>1</sup>, retrofits aiming for at least 85% reductions in energy use, all European post-war buildings could be brought to current comfort and energy standards in only a few decades' time.



European energy revolution fact sheets, Source: PHI/LANG consulting

## A Win – Win – Win strategy out of the crisis!

Funding of 400 billion euros would lead to some 3 trillion euros of investment; the public sector could cover such funding through the 600 billion brought in by VAT (value added tax)

<sup>1</sup> Deep renovations are described thermal renovations leading to at least 80% improvements in energy efficiency in the current European Energy Efficiency Directive paper of 28 February 2012.

or sales tax) alone. This would trigger some 4 trillion euros in energy cost related savings for the residents of these improved structures over a typical loan term – a not to be underestimated increase in purchasing power, which in turn would help spur economic development. Dr. Feist, however, stressed that the support coming from such an investment programme must only be granted to truly sustainable deep renovations, as low quality renovations only cement poor energy efficiency into the system.

In this way, 2.2 million green jobs could be created and 530 million tonnes of CO<sub>2</sub> could be saved over the entire time period, annually. These measures would additionally lead to a reduction in the trade balance deficit by 4 trillion euros, thereby sustainably mitigating the financial crisis for the EU. The 1,000 TWh reduction in energy use resulting from this plan would make Europe far less dependent on energy imports in the form of fossil fuels. In this light, any further mis-investment in fossil fuel and nuclear-powered energy plants would be made superfluous as Europe's renewable-based energy autonomy becomes a conceivable possibility.

Ernst Ulrich von Weizsäcker, keynote speaker and Co-Chair of the UNEP's International Resource Panel, found support for the ideas brought forth by EU Environment Commissioner Dr. Janez Potocnik and EU Finance Commissioner Algirdas Semeta necessary, namely, to reduce labour-related taxes while increasing taxes on energy, preserving social balance. Such tax policies would provide the right background for the energy revolution master plan.

### **Countless examples at the Conference show that extreme energy savings are already possible!**

Is bringing a city hall up to the Passive House Standard a luxury or an economic and sustainable undertaking? The example of a typical administrative building built in the 60s and 70s gave an unequivocal answer: Passive House paid off economically and sustainably for the municipality!

Current findings on 150 best practice examples of deep renovations in public buildings from Austria, Germany, Belgium, Slovenia, Italy, Switzerland, the Czech Republic, Sweden, Denmark, the UK and France show that the 20% increase in energy efficiency required by the EU Energy Efficiency Directive is already economically and technically feasible today. One third of these renovated public buildings even demonstrated energy savings of more than 90%.

In Hanover, a former 13,000m<sup>2</sup> manufacturing plant built in the 1950s was turned into a plus energy industrial building; the sun and biomass now provide for this Passive House's energy needs. That even historical structures can be retrofitted to Passive House level while retaining that which makes them so culturally-relevant was shown by the 160 year old "Vulgo Weber" farm house. The retrofit of a Community Center in London to Passive House level, resulting in 95% energy savings, underlines the large economic benefits of such renovations. Further examples from California, South Korea and Belgium hint at the worldwide potential for renovations to Passive House level.

At the Conference, certified EnerPHit insulation systems with connection details for energy retrofits were presented for the first time; their U-values can be directly entered into the Passive House Planning Package (PHPP). A certified pHA class Passive House window with a historical look offers even listed buildings the highest levels of comfort.

## **Proven Passive House cost-effectiveness**

The fact that Passive Houses are so affordable is becoming increasingly well-known. The first Passive Houses in Santa Fe, New Mexico, for example, cost the same amount to build as typical houses built to code in the area. Despite the low energy prices and the lack of strong legal framework in support of energy efficiency in the US, it still makes sense for commercial builders to start with the Passive House Standard from the very beginning in terms of return on investment. This is also the case in the UK, where a study showed that Passive House pays off in comparison to buildings built to the UK 2010 Building Regulations. The first two Passive House schools in the UK were built without any additional costs over what it would have cost to build conventionally, despite the high quality required by the Passive House Standard. The Standard also ensures both economy and sustainability in Public Private Partnerships (PPPs) over the building life cycle.

## **Front runner regions show the way**

The city of Freiburg (Germany) showed other municipalities how resolutions can successfully raise the energy standard for new builds to Passive House level. The city of Frankfurt am Main (Germany) boasts a total of 45 public buildings built to the Passive House Standard while the standard for new builds in Hamburg (Germany) brings with it a quality assurance model that ensures a sustainable increase in construction quality. Regions such as Rhineland-Palatinate (Germany), with its Tax Authority buildings and its Institute for Mathematics, showed that Passive House makes economic sense for public administration buildings.

## **From 0 to 250,000 towards Passive House**

The regions of Brussels presented how, in only 4 years, the total square metrage consisting of Passive House has spiked from 0 to 250,000m<sup>2</sup>. The Brussels region is thus a dramatic example of how the EU Performance in Building Directive, effective as of 2021, is being implemented with the Passive House Standard 6 years ahead of time. This makes it clear that with the right measures in place, what was once viewed as utopic can quickly become a reality.



Passive House hospital in Frankfurt, Germany  
Source: woernerundpartner



Passive House athletic boarding school of the Lower Saxony sports association, Source: Carsten Grobe

## Passive House clinics offer enormous potential

At the international Passive House Conference, the topic of Passive House clinics were treated for the first time, whether in the form of the psychiatric day clinic in Cologne, Germany, built with only 5.5% additional investment or the new, 70,000m<sup>2</sup> hospital being built in Frankfurt, Germany. The Passive House Standard as applied to hospitals and clinics is rapidly gaining significance with 7 such projects currently being planned and built – among them, 56,000m<sup>2</sup> clinics in Baden and Mödling, Germany; a 49,500m<sup>2</sup> ward for the Triemli Hospital in Zurich, Switzerland; and the 24,000m<sup>2</sup> Chu Saint-Pierre Hopital et Laboratoire as well as the L'Hopital du site Paul Brien in Brussels, Belgium.

## Passive House in cold climates

How should Passive Houses in cold climates be planned? Examples from Wisconsin (USA) and Scotland (UK) as well as the world's first Passive House indoor tennis hall in Sweden by tennis ace Stefan Edberg show designers what parameters must be given special attention.

## Passive House in hot, humid climates



Passive House in sub-tropical climates: the new Austrian Embassy in Jakarta, Lead architect: pos architecture Vienna, Client: Austrian Foreign Ministry (BMEIA), Photo: TimX.C.

The Austrian embassy in Jakarta, Indonesia is an example of how well Passive House works in even hot and humid climates, providing pleasant indoor temperatures and levels of indoor comfort that are virtually unheard of in such regions while showing dramatic energy savings for cooling. In a concept study for Passive Houses in hot and humid Shanghai, Berthold Kaufmann, in addition to giving recommendations regarding the dimensioning of the building envelope, proposed a building services concept that enables cooling and dehumidification via the supply air with minimal recirculation (twice per hour).

The requirements posed by the climate of Bhutan, with its generally sub-tropical climate and extreme winters offers ideal conditions for the implementation of Passive House technology. Quality in procurement, execution and the correct use of appropriate building materials remain, however, a challenge in the Himalayan region.

## Settle where there are Passive Houses

The region of Hannover already boasts hundreds of Passive House buildings. Since 1998, *enercity-Fonds* has subsidised some 750 Passive House residential units in *proKlima's* area of investment alone. Over 50 non-residential Passive House buildings can be added to this. "As of 2006, our statistics show a clear spike. The then incipient energy price hikes surely played a role," commented *proKlima* Director, Harald Halfpaap.

Press Release for the 4 May 2012 Press Conference on the 16th International Passive House Conference Master plan for the European energy revolution – Wolfgang Feist / Concept: Günter Lang Darmstadt/Hanover, Germany, 9 May 2012

The demand for Passive Houses continues to grow. A perfect example of this lies in Hanover, Germany, where Europe's largest zero emissions neighbourhood, the zero:e park with 300 Passive Houses, was toured by conference participants. "The erection of the houses in the first phase of construction is fully underway – several have already been occupied. Due to the great demand, marketing for the second construction phase had to be moved up one year," noted Halfpaap.

With its large number of Passive House buildings, Hanover is certainly playing the Germany's and the world's premier league of energy efficiency construction. It is for this reason that the International Passive House Conference took place in Hanover for the second time since 2006.

### **16th International Passive House Conference and Exhibition**

Conference: Friday and Saturday, 4 and 5 May 2012

Excursions: Sunday, 6 May 2012

Framework programme and side events: as of 2 May 2012

Location: Hannover Congress Centrum HCC

Theodor-Heuss-Platz 1-3

30175 Hanover, Germany

[www.passivehouseconference.org](http://www.passivehouseconference.org)

*90 international contributions were treated in 16 sessions while a the largest Passive House component exhibition complete with manufacturer's and tradesperson's forum, an international manufacturer's exchange, a Passive House Basics Course, an evening event in the AWD football arena and 8 excursions to Passive House projects in the Hanover area rounded out the framework programme.*



**The Passive House Institute and proKlima- Der energcity-Fonds are proud to have organised the 16th International Passive House Conference**

Please feel free to download photos for the event directly from the conference website at [www.passivehouseconference.org](http://www.passivehouseconference.org) under Press. For further questions, please contact Günter Lang and Sabine Stillfried of the Passive House Institute.

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