



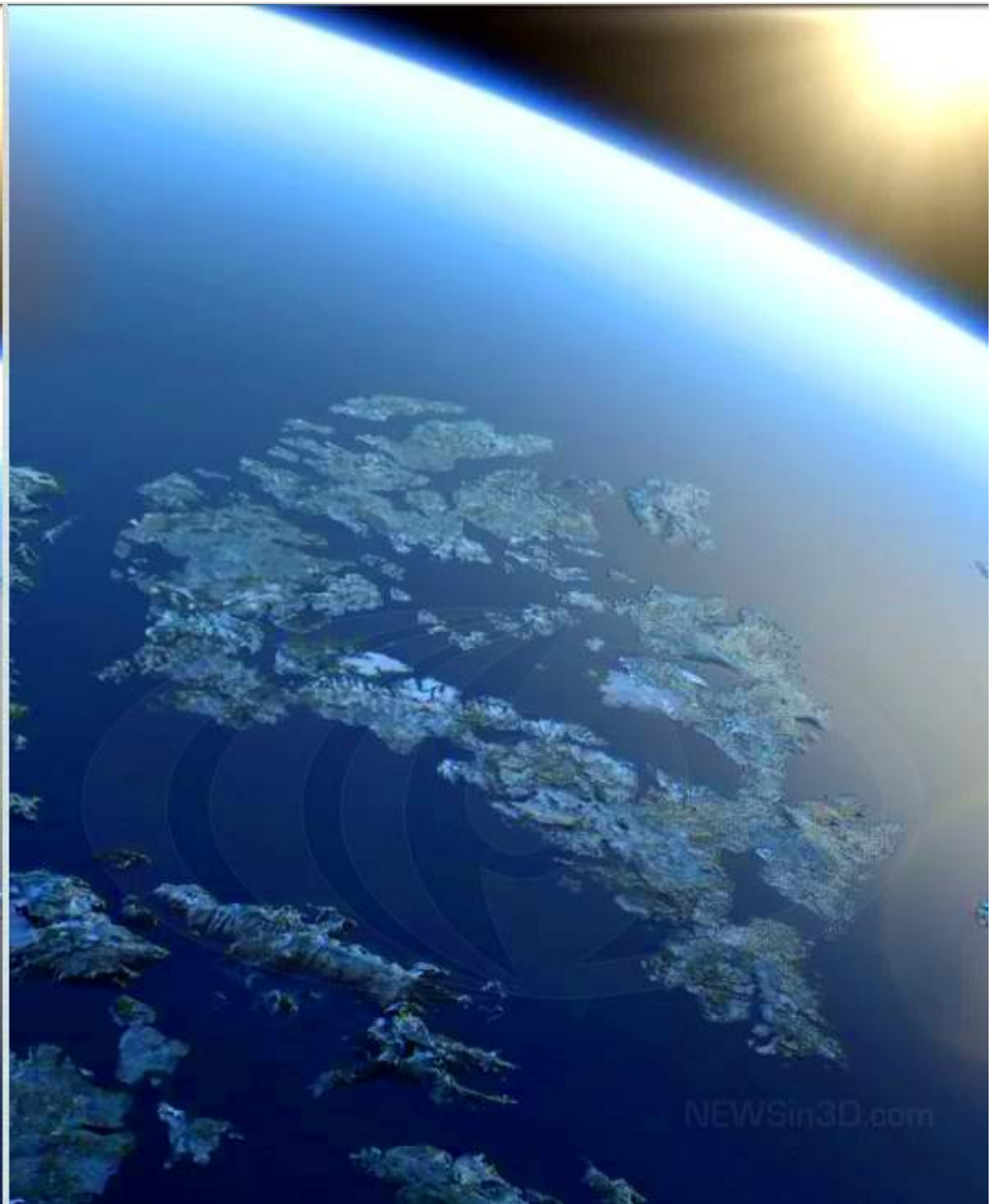
# Korean Passive House Institute

## 설립취지 및 운영방안

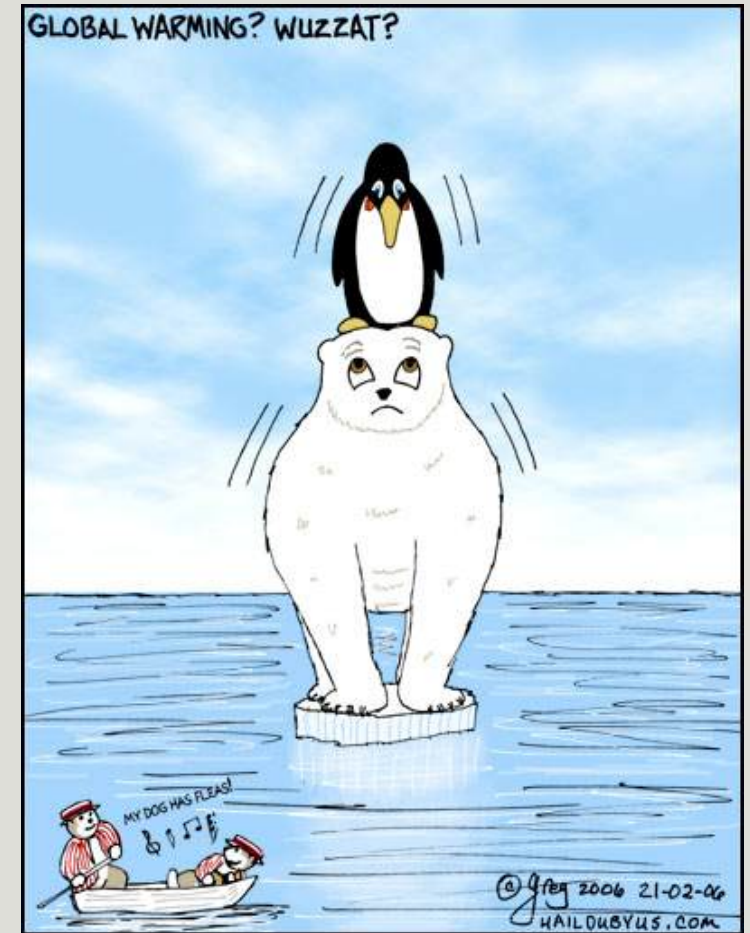
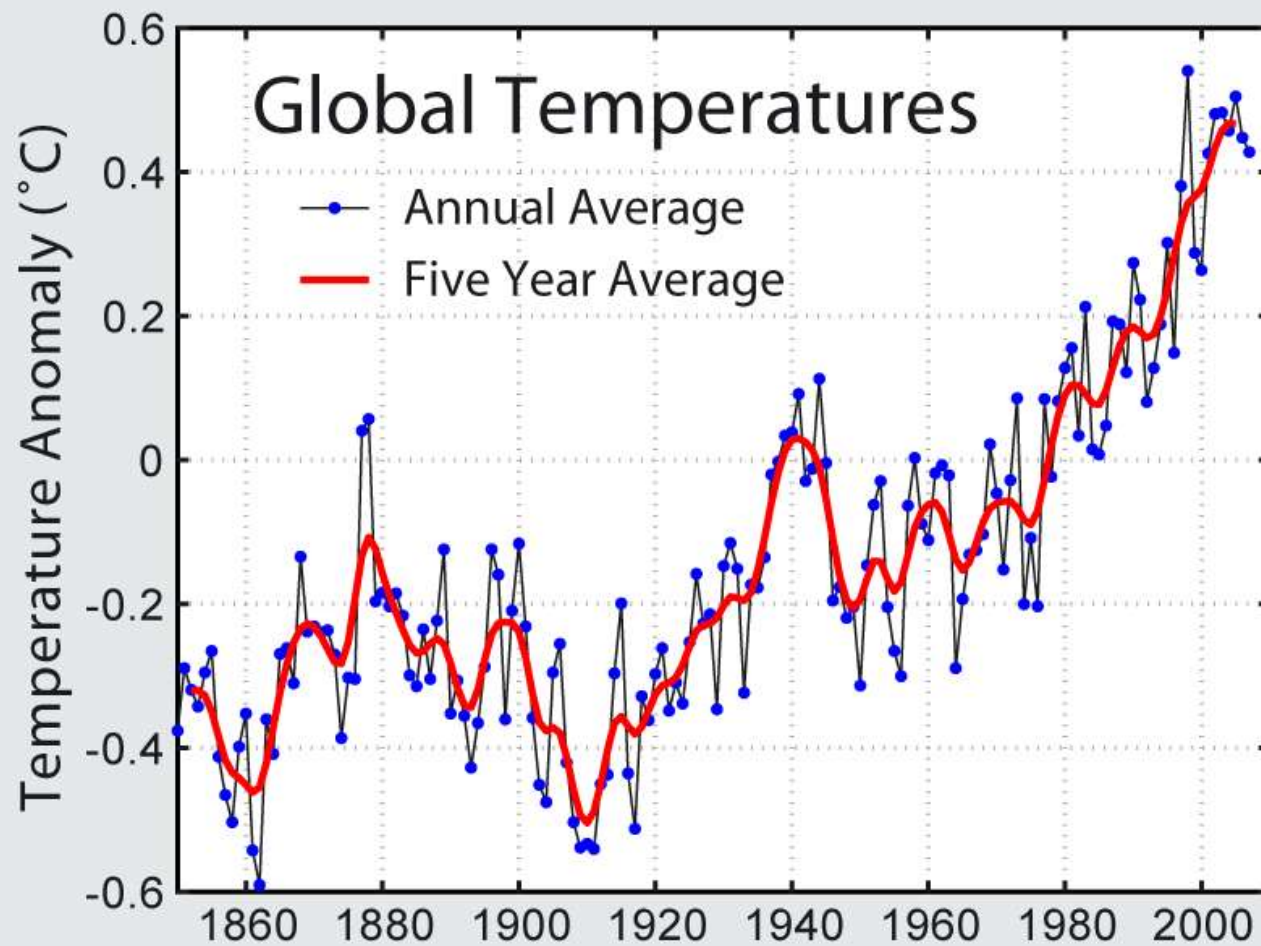
2011. 6. 7

서울대학교 김광우

## Why Sustainable Architecture?



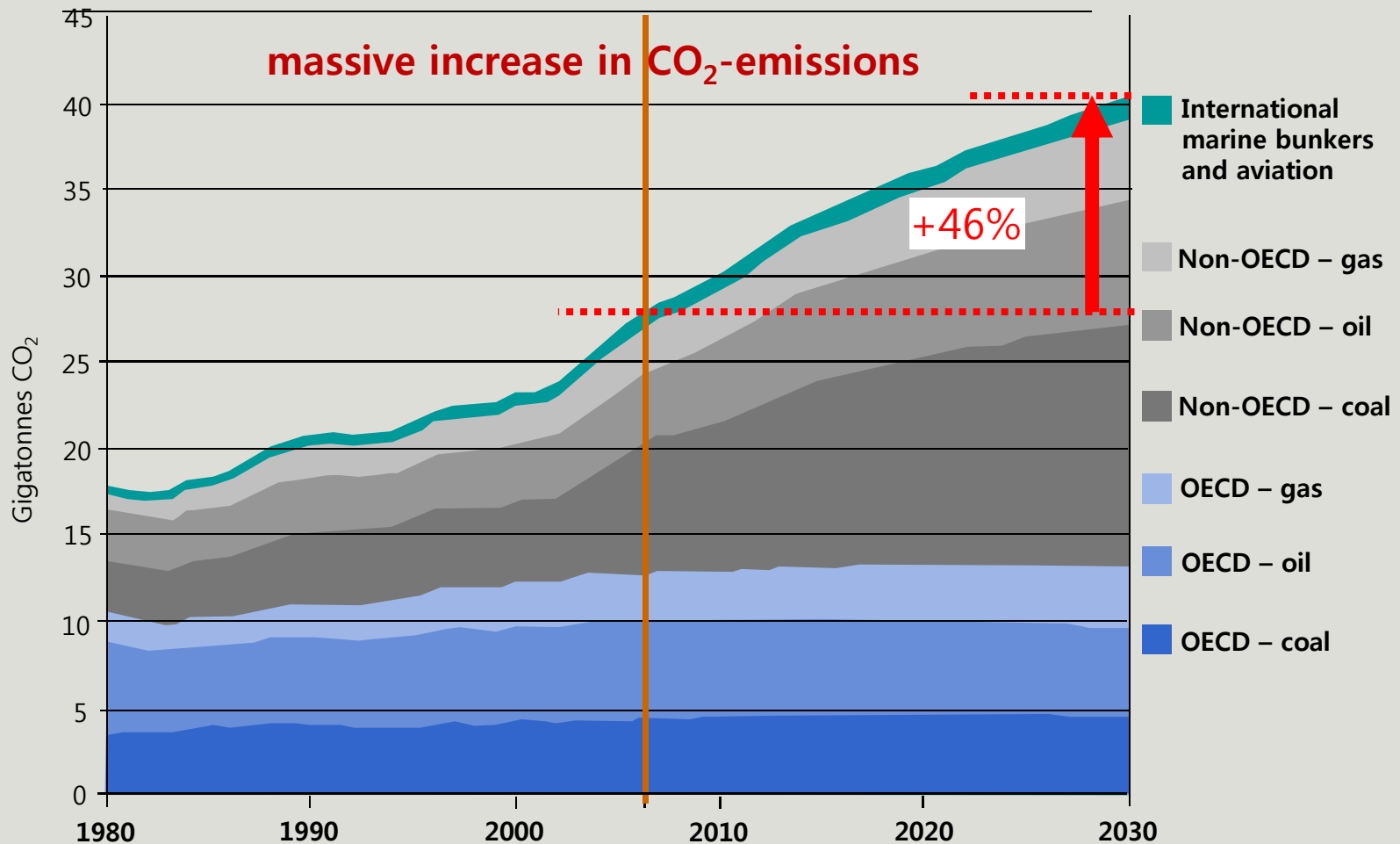
# Global Warming



## IEA-scenario for “business as usual”

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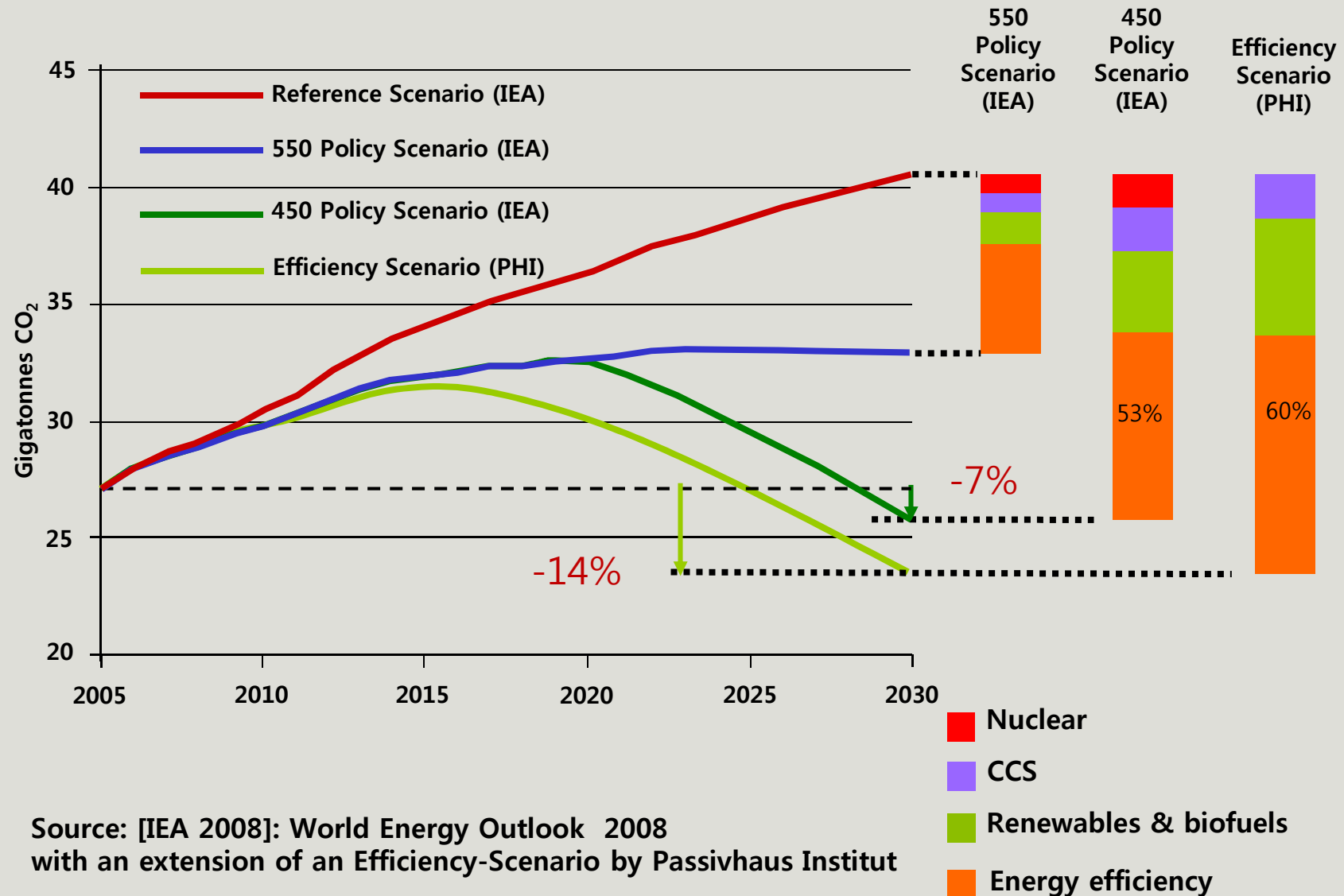
- The global temperature rises by an average of 5-6 K.



Source: [IEA 2008]: World Energy Outlook 2008

# Scenarios for CO<sub>2</sub> reduction

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## 국내 부문별 에너지 소비

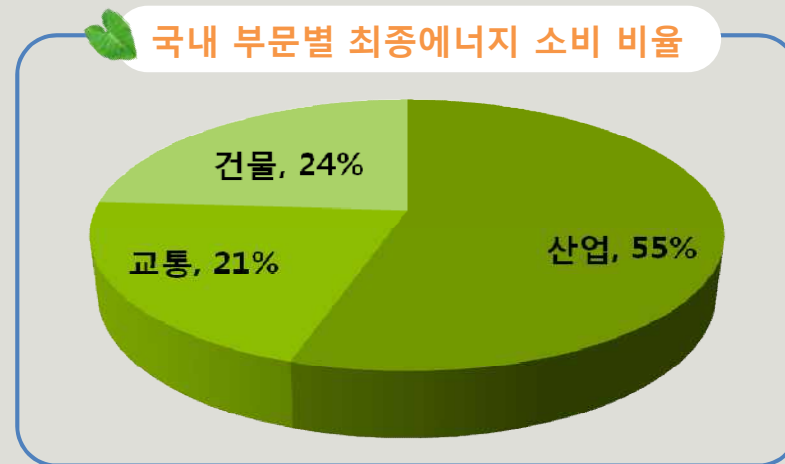
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### ■ 국내 부문별 최종에너지 소비 추이

- 국내 최종 에너지 소비에서 건물 부문이 차지하는 비중은 24%(2006년 기준)로 매우 높으며, 지속적으로 증가하는 추세임

구분	'02	'03	'04	'05	'06	'02~'06 평균 증가율
산업	89.2(56%)	90.8(55%)	93.0(56%)	94.4(55%)	<b>96.0(55%)</b>	1.9%
교통	33.8(21%)	34.6(21%)	34.6(21%)	35.6(21%)	<b>36.6(21%)</b>	2.0%
건물	<b>37.5(23%)</b>	<b>38.6(24%)</b>	<b>38.4(23%)</b>	<b>41.0(24%)</b>	<b>40.8(24%)</b>	<b>2.1%</b>
합계	160.5(100%)	164.0(100%)	166.0(100%)	171.0(100%)	173.4(100%)	2.0%

Source : 에너지 통계연보(2007) 산업자원부 에너지경제연구원, 단위 : 백만TOE, (1Tonnage of Oil Equivalent=11,630kWh)



➡ 전체 에너지 소비량 중 건물에서 소비하는 에너지 비중이 큼



## 국가 차원의 건물 에너지 절약을 위한 추진 계획

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### ■ 온실가스 감축에 대한 국가 차원의 목표

- 전체 국내 온실가스 : 대통령 직속 녹색성장 위원회는 2020년까지 온실가스 배출 전망치 대비 27~30% 감축 목표 설정  
(= 2005년 배출량 기준으로 환산할 경우 동결 또는 4% 감축)
- 건축물 부문의 국내 온실가스 : 전체의 25%를 차지하고 있는 건축물 부분에서는 온실가스를 2020년까지 배출 전망치 대비 31% 감축 목표 설정

### ■ 실천안

- 건축물 에너지 성능 기준 강화



Source : 건설기술연구원, 에너지 저소비형 건축물 기준 및 설계 시공 지침 마련

# What is Zero Energy House ?

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## Zero Net Energy – A Definition

“A residential or commercial building with greatly reduced needs for energy through efficiency gains, with the balance of energy needs supplied by renewable technologies.”

Building Technologies Multi-Year Program Plan prepared by the U.S. Department of Energy Building Technologies Program, 2007. Page 1-8.

Nicholas B. Rajkovich  
Pacific Gas and Electric Company  
San Francisco, California



## How can we achieve ... ?

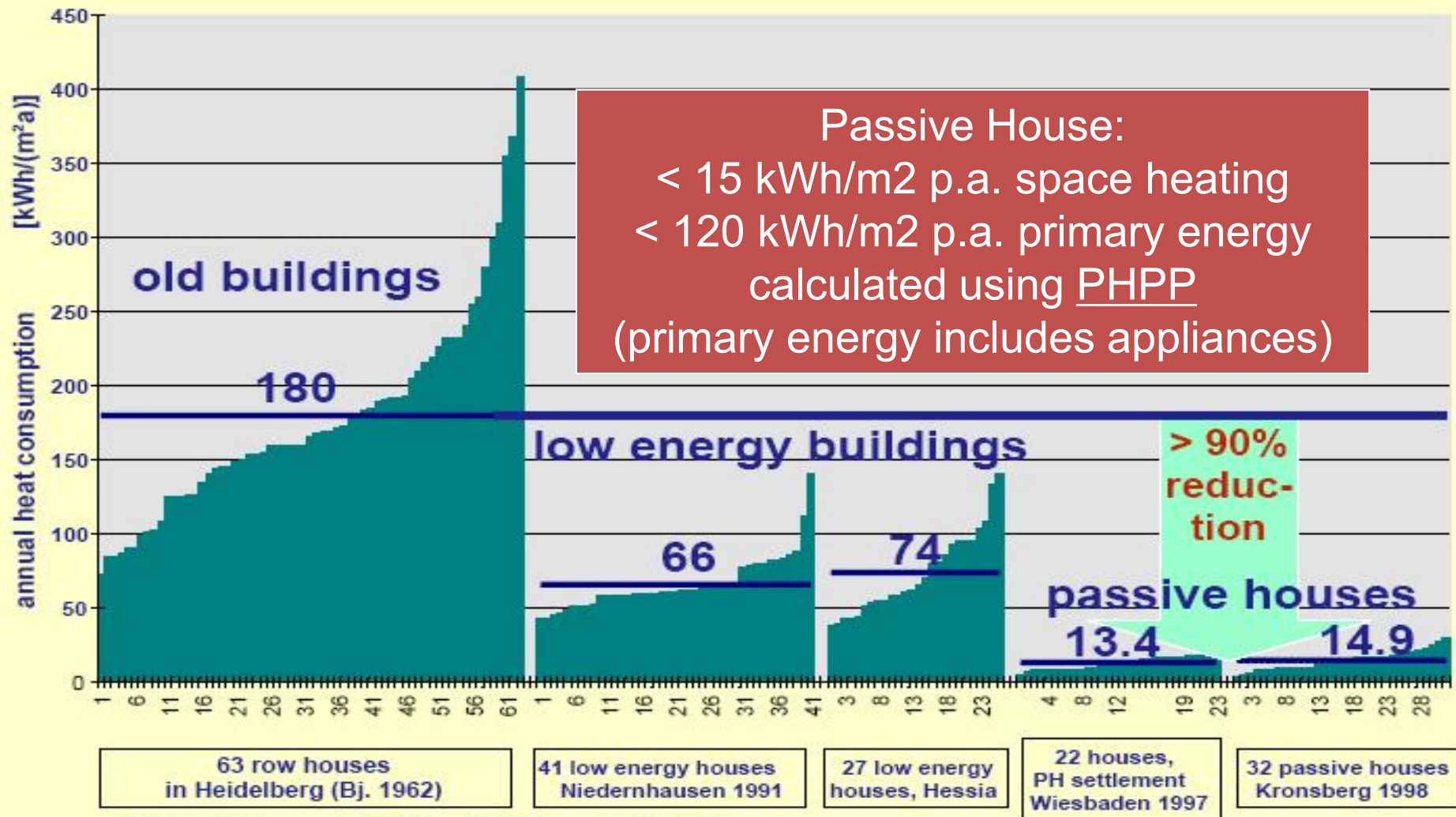
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## Passive House in Germany

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### occupants influence: the average is important



© Helmut Krapmeier / EIV and Wolfgang Feist / PHI

From Prof. Jon Hand, U of Strathclyde, U.K.

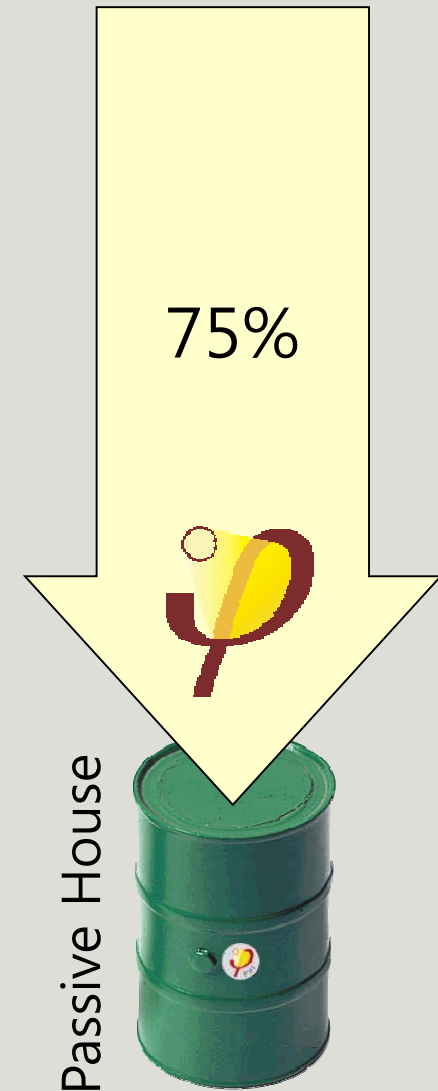
## Passive House concept: 1.5L House (heating energy 1.5L / m<sup>2</sup> yr)

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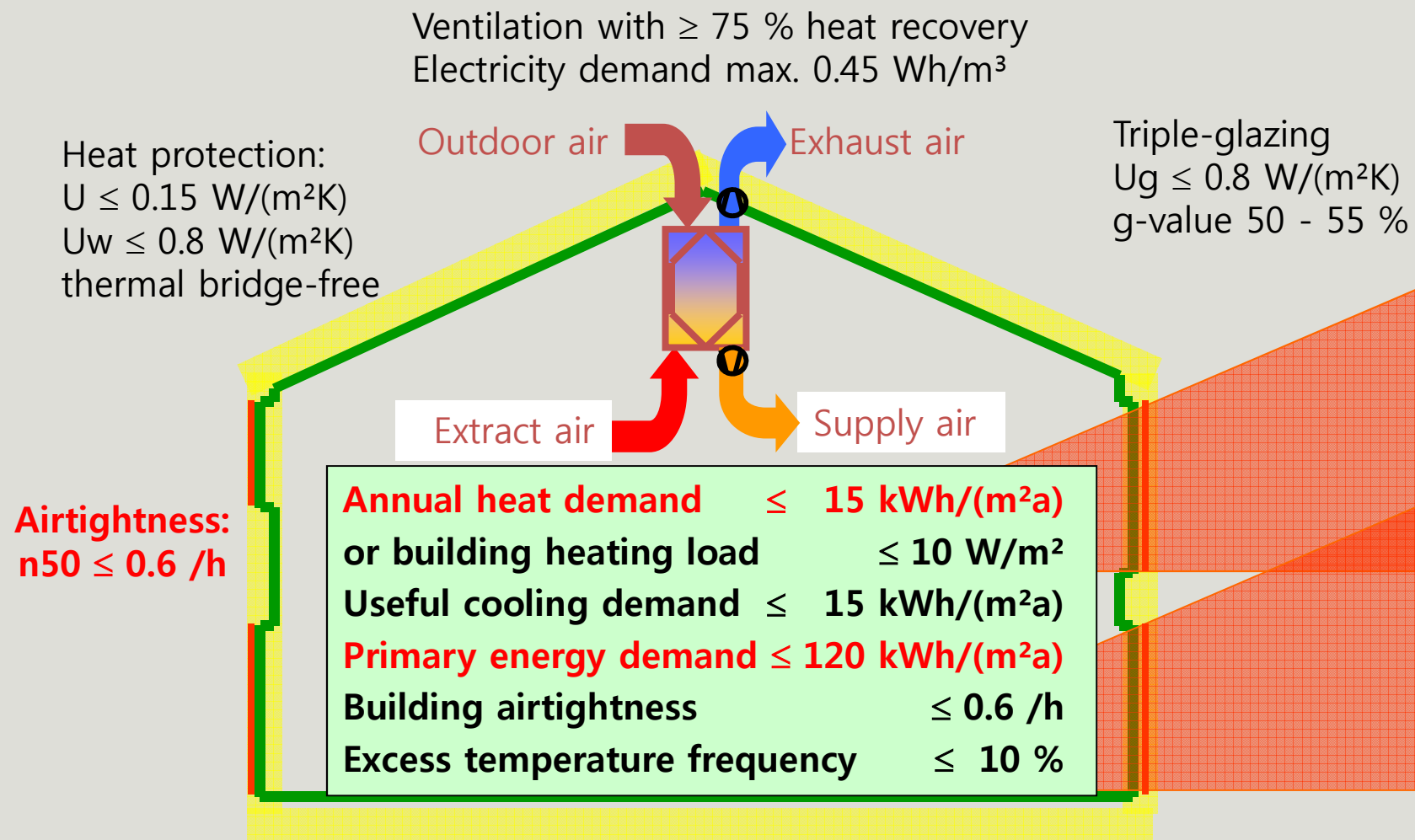
### 75 % 절감(난방에너지기준)

- 실현가능(Practicable)  
실현가능한 목표  
적용가능한 경제성
- 검증가능(Verifiable)  
확인가능한 결과
- 개방성(Open-concept)  
누구나 참여가능한 개념



## Passive House criteria

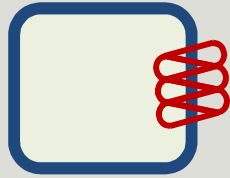
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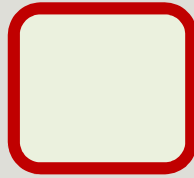
## Passive House를 위한 요소기술

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기술\*



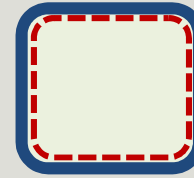
A. Superinsulation  
B. Very low thermal bridges



C. Compact building form



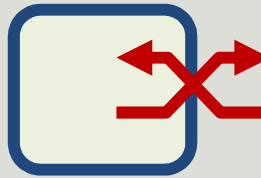
D. High efficiency window



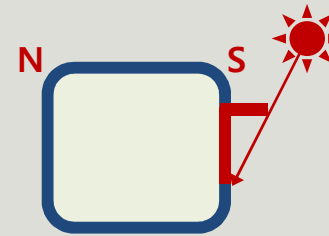
E. Excellent air-tightness



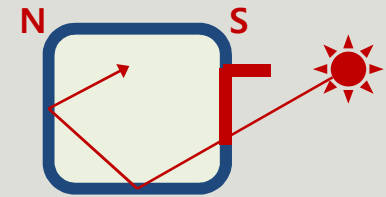
F. High-Efficiency Equipment



G. Ventilation system with very high heat recovery



H. A good orientation to the sun



I. Shading

\* [http://www.haydenrobinson.com/passive\\_house\\_energy\\_strategies\\_1.htm](http://www.haydenrobinson.com/passive_house_energy_strategies_1.htm)



## Passive House: Single-family houses

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## Passive House: Multi-storey buildings

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## Passive House: Schools

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Primary school Köln-Zündorf  
Heiermann Architekten



Montessori-Volksschule,  
Aufkirchen, WGVL-Architekten



Frankfurt Riedberg, 4a-Architekten



Primary school Preungesheim,  
Cheret und Bozic



Erweiterung Otto-Hahn-Gymnasium Dinslaken  
Hülsdonk & Ebbert



Hauptschule Klaus-Weiler-Fraxern,  
Dietrich | Untertrifaller

Foto: PHI

## Passive House: Offices

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## Passive House 현황: 국가별

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### ■ 유럽

- 독일 Passive House Institute ([www.passiv.de](http://www.passiv.de))
  - 1996년 독일의 Dr. Feist에 의하여 설립된 연구소로, Passive House 디자인 도구 및 전문가 양성을 위한 교육자료 개발, 자재 및 건물 인증 등 중심 역할을 함
  - 매년 passive house conference, passive house day를 개최함
- 오스트리아 APG(Austrian Passive House Group, [www.oesterreichhaus.at/en](http://www.oesterreichhaus.at/en))
- 영국 BRE Passivhaus ([www.passivhaus.org.uk/](http://www.passivhaus.org.uk/))
- 덴마크 Danske Passivhuse ([www.passivhus.dk](http://www.passivhus.dk))
- 뉴질랜드 NZ Passive House ([www.passivehouse.org.nz](http://www.passivehouse.org.nz))
- Certified European Passive House Designer ([www.passivehousedesigner.eu](http://www.passivehousedesigner.eu))

### ■ 북아메리카

- 미국 Passive House Institute US ([www.passivehouse.us](http://www.passivehouse.us))
- 캐나다 Canadian Passive House Institute ([www.passivehouse.ca](http://www.passivehouse.ca))

### ■ 아시아

- 일본 Passive House Japan ([www.passivehouse-japan.org](http://www.passivehouse-japan.org))

➔ **한국 Korean Passive House Institute ([www.phikorea.or.kr](http://www.phikorea.or.kr))**





## Passive House 현황: 국제 및 정보공유

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▪ <http://www.passivehouse-international.org>



▪ <http://www.ig-passivhaus.de>



▪ <http://www.passivhausplaner.eu>



▪ [http://passipedia.passiv.de/passipedia\\_en](http://passipedia.passiv.de/passipedia_en)



## iPHA (International Passive House Association)

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- **Passive House 관계자 (건축가, 과학자, 제조 업체, 공급 업체, 개발자 등)의 글로벌 네트워크**
  - Passive House 홍보 및 설명
  - Passive House의 지식 교환, 일반 대중과 건설 전문가의 참여 유도
- **목표 및 활동**
  - Passive House 분야 관계자 연결
  - Passive House Standard 에 대한 전문지식 공유
  - Passive House 건물 홍보
  - Passive House 프로젝트와 사용자 경험 공유




# Passipedia: Passive House 정보뱅크

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## ■ IPHA 및 PHI 회원들의 지식공유





search

Go Search

International  
**PASSIVE HOUSE**  
Association

navigation

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- Basics
  - What is a Passive House?
  - The Passive House - definition
  - The Passive House - historical review
  - Energy and ecology
  - Efficiency vs. performance
  - Energy efficiency - the key to future energy supply
  - Summer
  - Internal heat capacity
  - Building physics - basics
  - Affordability
  - Passive Houses in different climates
- Planning
  - Calculating energy efficiency
  - Thermal protection
  - Airtight construction
  - Building services
  - Calculating energy efficiency
  - Refurbishment with Passive House components
  - Non-residential Passive House buildings

article
discussion
recent changes


You are here: start

### Welcome to Passipedia!

**The Passive House resource**

Welcome to Passipedia, the Passive House resource! Passipedia constitutes a vast array of cutting edge, scientifically sound, Passive House relevant articles. On Passipedia, basic Passive House information and insights are available for all to see, whereas members of the International Passive House Association (iPHA) receive special access to the more in depth sections. Growing daily, Passipedia is the tool with which new Passive House findings from around the world are being presented, as well as where the highlights of almost 20 years of PHI research on Passive Houses are being posted, often for the first time ever in English. iPHA is constantly working to add to the information available on Passipedia, so please keep visiting in the future to find the latest articles and watch Passipedia grow!



**Languages**



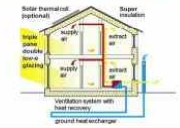

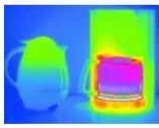

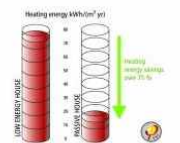


**More Information**

Access to the Passipedia member area

Passipedia is brought to you by

**Passipedia - picture guide**

<p><b>What is a Passive House?</b></p> 	<p><b>The world's first Passive House</b></p> 	<p><b>Energy efficiency - the key to future energy supply</b></p> 	<p><b>Energy balance and planning tool</b></p> <p><b>PHPP 2007</b></p>
<p><b>More comfortable in the summer</b></p> 	<p><b>It pays off!</b></p> 	<p><b>The Passive House - historical review</b></p> 	<p><b>Superior comfort and energy savings</b></p> 

**Passive House News**

The latest news & developments:

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## Passive House 관련 연구

### ▪ CEPHEUS(Cost Efficient Passive Houses as European Standards, 1998~2001)

- 독일, 오스트리아, 프랑스, 스웨덴, 스위스 5개국에서 Passive House Standard를 적용하여 약 250개의 주거세대를 시공하고 성능을 평가한 프로젝트

### ▪ Passive-On Project (2005~2007)

- Passive House Standard가 독일, 오스트리아, 프랑스 북부, 스웨덴, 스위스와 같은 난방부하 위주의 기후에서 발전된 점을 고려하여, 따뜻한 기후에서 Passive House Standard의 적용을 활성화시키기 위한 목적으로 진행된 프로젝트
- PHPP 2007 버전에 일사부하와 야간환기, 잠열부하 등을 계산할 수 있는 부분이 추가됨

### ▪ 환경 성능

- Overheating in residential passive house, Energy and Buildings, 2011
- A performance comparison of passive and low-energy buildings, Energy and Buildings, 2010

### ▪ 경제성 분석

- Economic analysis of passive houses and low-energy houses compared with standard houses, 2008
- Economic aspects of using ground thermal energy for passive house heating, Renewable energy, 2007

### ▪ 재생에너지 적용

- Simple and accurate model for the ground heat exchanger of a passive house, Renewable energy, 2007
- Renewable energy for passive house heating, Energy and buildings, 2003

## 한국건축친환경설비학회(KIAEBS) 동향

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- 2017년 Passive House, 2025년 Zero Energy Building 실현을 위해 학회 내 Zero Energy 및 Passive House 분과 위원회를 설치, 다음과 같이 추진 중

### 건물에너지 절약



### Passive House



### Zero Energy Building

- 에너지 절약 관련 전문가 양성
- 건물에너지 효율 향상 기술 개발

- Passive House 관련 전문가 양성
- Passive House 보급 확산

- Zero Energy Building 기술 개발
- Zero Energy Building 보급 확산



## 한국건축친환경설비학회(KIAEBS) 동향

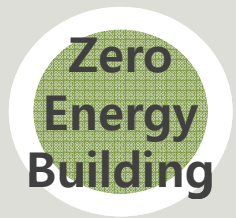


2017년 Passive House 구현을 위하여 다음과 같이 추진 중

- 독일 Passive House Institute와 협약 체결 중
- Passive House Criteria for Korea 도출
- Passive House Designer 교육 및 인증 계획
- Passive House 기술 개발
- Passive House 인증 및 보급

## 한국건축친환경설비학회(KIAEBS) 동향

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2025년 Zero Energy 건축물 구현을 위하여 다음과 같이 추진 중

- Dynamic Building Energy Simulation 전문가 교육 및 인증
- Zero Energy Building Condition for Korea 도출
- Zero Energy Building 관련 Active & Passive 기술 개발
- Zero Energy Building 인증 및 보급



GE Targets  
Net Zero Energy Homes  
by 2015

\* [http://www.greentelecomlive.com/wp-content/uploads/2009/07/ge\\_netzeroenergyhome\\_0001.jpg](http://www.greentelecomlive.com/wp-content/uploads/2009/07/ge_netzeroenergyhome_0001.jpg)

## 한국건축친환경설비학회(KIAEBS) 동향

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### 건물에너지 절약

#### ■ 건축물 에너지 효율등급 평가 분야 자격 종목 개발 연구 수행

PART 1-1. 건축물 에너지효율등급 평가사 자격종목 도입의 필요성 및 요구분석

PART 1-2. 국내외 제도 및 인력양성 교육 현황 조사

PART 2-1. 에너지효율등급 평가사 직무분석

PART 2-2. 건축물 에너지효율등급 평가사 자격체제 개발

PART 2-3. 건축물 에너지효율등급 평가사 자격의 교육훈련 프로그램 설계

PART 3. 건축물 에너지효율등급 평가사 제도 정착 및 자격 활성화 방안

- 1. 제도적 방안
- 2. 국내 기존 자격제도와 같은 권한 부여 방안
- 3. 교육 및 인력 수급 계획
- 4. 기술적 방안
- 5. 자격제도와 교육훈련과정의 연계 운용체계 방안 제시

## Passive House 를 위한 KIAEBS의 진행 사항

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- 2010년 10월, KIAEBS & PHI 협약 체결
- 2010년 11월, KIAEBS 학회공지, 대한건축학회 메일링, Auric 뉴스레터 공지
- 2010년 12월 25일, 3차 회의: PH연구소 설립방안, PHPP 매뉴얼 번역 논의
- 2011년 01월 17일, 4차 회의 및 PHPP 1차 review, 건설사 의견 수렴
- 2011년 01월 27일, 5차 회의 및 PH 관련 전문연구 분야 논의
- 2011년 02월 23일, 6차 회의 및 PHPP 2차 review, 역할분담 논의
- 2011년 03월 10일, 7차 회의 : PH 추진관련 역할분담 논의
- 2011년 03월 17일, Passive House Designer 자격시험 및 PHPP 2007 판매 공지
- 2011년 03월 18일, 독일 PHI 방문, 협약관련 내용 협의
- 2011년 03월 21일, iPHA에 춘계학술대회 특별세션 홍보
- 2011년 03월 28일, iPHA member 가입
- 2011년 04월 09일, 1차 Passive House Designer 자격시험 실시
- 2011년 04월 30일, PHPP 2007번역 및 감수 완료
- 2011년 05월 16일, 8차 회의
- 2011년 05월 24~30일, 15th Passive House conference 참가
- 2011년 06월 01일, 9차 회의



한국패시브하우스연구소 개소식

# KIAEBS & PHI contracts: 2010년 10월 6일 협약 체결

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- Passive House Designer 교육기관
- Passive House Designer 시험기관
- PHPP 프로그램 및 매뉴얼의 한국어 버전 판매

## Contract between

The Passive House Institute Prof. Dr. Wolfgang Feist  
Rheinstr. 44-46  
D 84283 Darmstadt

hereafter referred to as "PHI"

and

Korean Institute of Architectural Sustainable  
Environment and Building Systems  
Mr. Prof. Kwang Woo Kim  
Main Bldg. Rm. 40  
Korean Fed. Of Science Societies  
Yeoksam 1-dong 635-4  
Gangnam-gu  
KR 135-707 Seoul

VAT ID No.:

hereafter referred to as "Course Provider"

## Preamble



The Passive House is the leading standard for energy efficient construction worldwide.

The aim of the IEE Project "Certified European Passive House Designer" (hereafter referred to as "CEPH") is to improve the qualification of architects and engineers significantly and to ensure high quality planning and construction of Passive Houses by providing further training opportunities.

For verification of this qualification the PHI has developed the "Certified Passive House

## §10 Final provisions

- (1) Additional oral agreements to this contract do not exist. Any modifications and amendments of this contract shall be subject to a written agreement. This shall also apply to the waiver of the written form requirement.
- (2) The provisions of the German Civil Code (BGB) shall be applicable, provided that no other arrangements have been made. The place of performance and jurisdiction is Darmstadt.

Darmstadt, 06.10.10

Passive House Institute Dr. Wolfgang Feist

Professor Dr. Kwang Woo Kim  
Kang-Soo Kim  
KIAEBS President Kang-Soo Kim  
(Course Provider)

Course Provider

Contract for accreditation by the Passive House Institute as an Examination Host for the "Certified Passive House Designer" Certificate

between

**PASSIVE HOUSE INSTITUTE**  
Dr. Wolfgang Feist  
Rheinstr. 44-46  
D-84283 Darmstadt  
Tel. + 49 (0)6151 8 26 99-0 Fax: + 49 (0)6151 8 26 99-11  
hereafter referred to as "PHI"

and

Korean Institute of Architectural Sustainable  
Environment and Building Systems  
Mr. Prof. Kwang Woo Kim  
Main Bldg. Rm. 40  
Korean Fed. Of Science Societies  
Yeoksam 1-dong 635-4  
Gangnam-gu  
KR 135-707 Seoul

hereafter referred to as "Examination Host"

## Preamble

The Passive House is the leading standard for energy efficient construction worldwide. The aim of the advanced training opportunity "Certified Passive House Designer" is to improve the qualification of architects and engineers significantly and to ensure high quality planning and construction of Passive Houses. For verification of this qualification the PHI has developed the "Certified Passive House Designer" certificate.



The Examination Host guarantees high quality further training of the participants regarding the planning of Passive Houses in accordance with the PHI criteria. As laid down in the examination regulations, the Examination Host will also enable other persons to take part in a regular examination. The qualification shall be proven by a final examination prepared by

The place of jurisdiction is Darmstadt.

Signed: 06.10.10

Passive House Institute Dr. Wolfgang Feist  
Rheinstr. 44-46  
D-84283 Darmstadt  
Tel. 06151 8 26 99-0  
Fax 06151 8 26 99-11

Professor Dr. Kwang Woo Kim  
Kang-Soo Kim  
KIAEBS President, Kang-Soo Kim  
(Examination Host)

Contract Examination Host KIAEBS Page: 3 of 3

Examination Host

## Weiterverkäufer-Vertrag über das Projektierungstool PHPP

### Abschnitt 1: Vertragspartner

Dieser Weiterverkäufervertrag wird abgeschlossen zwischen

Korean Institute of Architectural Sustainable  
Environment and Building Systems  
Mr. Prof. Kwang Woo Kim  
Main Bldg. Rm. 40  
Korean Fed. Of Science Societies  
Yeoksam 1-dong 635-4  
Gangnam-gu  
135-707 Seoul  
KOREA  
Ust.-Id. Nr. ....  
(im folgenden als "Weiterverkäufer" bezeichnet)

und dem

Passivhaus Institut  
Dr. Wolfgang Feist  
Rheinstr. 44-46  
84283 Darmstadt, Deutschland  
Ust.-Id.Nr. DE 180 568 294  
(im folgenden als "Entwickler" bezeichnet).

### Abschnitt 2: Vertragsgegenstand

1. Der Vertrag umfasst als Vertragsgegenstand das Projektierungstool PHPP. Dieses besteht aus dem Programm (realisiert als Tabellenkalkulations-Arbeitsmappe) PHPP 2007 und einem Handbuch in englischer Sprache.
2. Der Vertragsgegenstand dient der Erstellung von Energiebilanzen und der Projektierung von Passivhäusern bei Wohn- und wohnähnlichen Gebäuden.

### Abschnitt 3: Copyright

1. Das Copyright an PHPP einschließlich des Handbuchs liegt beim Entwickler. Das Copyright umfasst insbesondere:  
- die Wiedergabe von PHPP oder Teilen davon in gedruckter, elektronischer und allen sonstigen Formen inkl. aller Übersetzungen,  
- das Recht der Weiterentwicklung von PHPP oder Teilen davon einsch. des Rechts der Übertragung auf eine andere Entwicklungsumgebung,  
- das Recht, Nutzungsverträge und Lizenzverträge für PHPP zu vergeben.

### Abschnitt 4: Rechte des Weiterverkäufers

3. Sollten einzelne Bestimmungen dieser Vereinbarung unwirksam sein, berührt das nicht die Wirksamkeit der Vereinbarung insgesamt. Anstelle unwirksamer Bestimmungen treten die nach den gesetzlichen Vorschriften wirksamen Bestimmungen, soweit sie dem in dieser Vereinbarung zum Ausdruck gekommenen Willen der Vertragsparteien entsprechen.

Erfüllungsort und Gerichtsstand ist Darmstadt.

Darmstadt, 06.10.10

(Ort, Datum)  
Der Entwickler

Seoul, Korea, September 9, 2010

(Ort, Datum)  
Der Weiterverkäufer

PHPP Reseller



## KPHI 운영 방향

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- Passive House Institute(Germany), iPHA 등과 Passive House에 관한 국제적 교류 추진
- PHPP2007(Passive House 평가도구) 및 매뉴얼 한국어판/영문판 판매(2011년 6월)
- Passive House Designer, Passive House Consultant를 위한 교육
- "Certified Passive House Designer, Consultant " 자격 시험 실시  
(영어 시험 실시, 추후 한국어 시험 도입, 년 4회, 1차 실시완료, 2차 실시예정: 6월 11일)
- 한국에 맞는 Passive House 기준 및 데이터 개발(including Korean climate data)
- 산학연 연계를 통한 Passive House guidelines, manuals 개발
- Passive House 확산을 위한 기술교육 및 정보 보급
- Passive House 적용을 위한 재료 및 제품 인증
- Passive House의 성능 인증
- 국가 건물에너지절약 정책 및 정부 유관기관과 상호협조 추진
- Extend international activities(한, 중, 일 교류)



**Thank You**