![GBPN — Global Buildings Performance Network | Building Policies for a Better World](logo)

WHAT IS A DEEP RENOVATION DEFINITION?

Executive Summary • March 2013

COPYRIGHT

ACKNOWLEDGEMENTS

ACKNOWLEDGEMENTS

LIST OF ACRONYMS

AERG- Advanced Energy Retrofit Guides
CO$_2$ - Carbon dioxide
DHW- Domestic hot water
DOE- US Department of Energy
DR- Deep renovation/ refurbishment/ retrofit
EED- EU Energy Efficiency Directive
EPBD- EU Energy Performance Building Directive
ESCO - Energy Service Company
EU- European Union
GBPN- Global Buildings Performance Network
GHG- Greenhouse gas
HVAC- Heating, ventilation, and air conditioning
kW- Kilowatt
kWh - Kilowatt-hour
MEP- Member of the European Parliament
nZEB- Nearly Zero Energy Building
O&M- Operations & Maintenance
US- United States

EXECUTIVE SUMMARY

Existing Buildings Mitigation Potential by Renovating Deeply

A huge potential for energy savings lies in the renovation of the existing building stock. It is a prerequisite that these buildings are renovated "deeply" for the building sector to reduce their greenhouse gas (GHG) emissions and meet global energy reduction objectives. The Global Building Performance Network's (GBPN) mission is to dramatically reduce the energy use of existing buildings and consequently reduce the GHG emissions associated. GBPN facilitates this by following a "deep energy efficiency scenario".

An agreed upon understanding of DR (deep renovation / retrofit / refurbishment) and the major challenges surrounding this issue will support development at a regional or national level and will call for global action. The acronym "DR" is used in this document because most regions use different definitions or expressions for the action of a deep improvement. The most commonly used expressions are: deep renovation, deep retrofit, deep refurbishment, and to a lesser extent, deep reduction. The problem is that these expressions mean different things to different analysts. Thus, there is a need to come to a better understanding to minimise confusion and mis-communication. A standard renovation or refurbishment will often harvest the minimum possible energy savings, ranging between 20% and 30%, sometimes even less. However, by renovating deeply, using state-of-the-art technologies, it is possible to reduce the energy consumption of a building by more than 75%.

Webinars and Questionnaire – Methodology

The GBPN organised a project to help provide a harmonised DR definition, these include. The project included two webinars, a questionnaire and a review process. Initially, a desktop research study was completed to collect current global and local definitions and conditions of a deep renovation. The findings were presented in a webinar that comprised of thirty international experts in the field of building renovation. The webinar was used to collect the opinions and understandings of what these experts believe to be a DR definition. These opinions were presented as conditions and targets of a DR definition in a questionnaire that was sent to the same group of experts. The questionnaire sought to harmonise and clarify a definition for DR.

What is Deep Renovation?

What does deep renovation mean? It became obvious from the reaction of the panel of experts that there is no common definition of DR established, neither at a regional or international level. The definition of DR varies between the regions. The results of the questionnaire displayed a clear distinction between the terms "deep renovation" and "deep retrofit". Experts from Europe found that renovation was the term most commonly used whereas experts from the US found that retrofit was the term usually used. Generally, the definition relating to a deep renovation aimed for the deepest reductions of all the terms, these improvements mainly concern the buildings envelope. The definition of a retrofit focuses mainly on the building's mechanical systems.

In Europe most definitions focus on heating, cooling, ventilation and hot water and the general understanding is that these should lead to an improvement of at least 75% after the building has been renovated. Most commonly, DR in the US calls for improvements in the range of 30% – 50%, however, this is based on full energy consumption including plug load. The relative targets or the final energy consumption after a deep renovation / retrofit project will range within the values mentioned in the definitions depending on climate zones, loads and type of buildings and should be specified at local level.

The end result of this exercise resulted in the GBPN and its experts setting some commonly agreed definitions of deep renovation and retrofit. GBPN will use the definitions stated in chapter "Deep Renovation Definitions"[1] and will be consistent in using these.

---

[1] The full list of definitions can be found in chapter "Deep Renovation Definitions".

GBPN

Global Buildings Performance Network

9 rue du Quatre Septembre
75002 Paris
France

+33 (0)1 70 98 31 30
info@gbpn.org

www.gbpn.org
@GBPNetwork

About GBPN The Global Buildings Performance Network (GBPN) is a globally organised and regionally focused network whose mission is to advance best practice policies that can significantly reduce energy consumption and associated CO_2 emissions from buildings.