IT’S QUIZ TIME
FINANCING SUSTAINABLE BUILDINGS

“Quizzing the Stakeholders”

Introductory Remarks:
Adam McCarthy, President, EuroACE
FINANCING SUSTAINABLE BUILDINGS

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“Quizzing the Stakeholders”

**Introductory Remarks:** Adam McCarthy, President, EuroACE

**Moderator:** Nick Andrews, Fleishman Hillard

- **Quiz Session 1:** Sustainable Buildings - What are the benefits?
  Lone Feifer, Programme Director Sustainable Living in Buildings, VELUX A/S

- **Quiz Session 2:** EU Policies for Buildings - What next?
  Pavel Misiga, DG Environment, European Commission

- **Quiz Session 3:** Financing Models - Which are successful and why?
  Alexander Paskov, Johnson Controls

**Conclusions:** Adrian Joyce, Secretary General, EuroACE
Session 1

IT'S

Q U I Z

TIME
Sustainable Buildings - WHAT ARE THE BENEFITS?

Lone FEIFER,
Programme Director Sustainable Living in Buildings, VELUX A/S
Sustainable Buildings – what are the benefits?

EuroACE at EUSEW 2013
25.06.2013

Lone.Feifer@velux.com
Programme Director Sustainable Living in Buildings
VELUX Group
Agenda

- Background
  - VELUX platform, Sustainable Living in Buildings
  - Active House Alliance & Principles
  - The Experiments in Model Home 2020

- Facts & documentation
  - Benefits of sustainable buildings
  - Creating jobs
  - Additional cost range
  - Health & Productivity
  - Large toolbox

- Conclusions
VELUX commitment

- Sustainable Living in Buildings is our commitment to people and planet.

- We engage with key stakeholders and deliver products and solutions, made to optimise human health and well-being and minimise environmental impact.
People spend **90%** of our time inside buildings, which represent **40%** of the energy consumption, however up to **30%** of the buildings may represent a negative influence on our health & comfort*

- or could the challenges be tackled in one solution?

- **Sick building syndrome (SBS)** is a combination of ailments associated with an individual’s place of work or residence. A 1984 World Health Organization report into the syndrome suggested up to 30% of new and remodeled buildings worldwide may be linked to symptoms of SBS. Most of the sick building syndrome is related to poor indoor air quality.
Building a new model

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

– Richard Buckminster Fuller
Active House radar
- the holistic approach

- **Active House principles**
  - Comfort
    - Daylight
    - Thermal environment
    - Indoor air quality
  - Energy
    - Energy demand
    - Energy supply
    - Primary energy performance
  - Environment
    - Environmental load
    - Freshwater consumption
    - Sustainable Construction
The experiments for 2020 - the MODEL HOME programme

› *One experiment is better than a thousand expert assumptions*
  Villum Kann Rasmussen, Founder of VELUX

› **Six 1-to-1 experiments**
  that demonstrate 2020 regulations,
  based on the **Active House** principles

› **All projects** are monitored
  in use, to gain learnings and experiences

› = we can fulfil 2020 regulations with todays knowledge and products
6 houses in 5 countries
2009-2011

- Carbonlight Homes, UK
- Home for Life, DK
- Green Lighthouse, DK
- LichtAktiv Haus, Germany
- Maison Air et Lumière, France
- Sunlighthouse, Austria
VELUX products and solutions - key aspects of sustainability

- All-seasons focus on
  - Winter AND summer comfort
- Natural ventilation
  - Primary source of ventilation
  - Chimney effect
- High daylight quality
  - Factor, not percentage
  - Strategically placed windows
- User control
  - Manual override
  - Security
- Energy efficiency by design
  - Dynamic sun screening
  - Use of Energy Balance
Benefit Facts
For quiz and qualification
Jobs created as output of energy efficiency

- An average of 19 jobs is created per €M invested into energy efficiency
- Public sector renovation policy would result in energy savings of 56% and carbon savings of 86%
- Total benefits to society amount to nearly €200bn

Documentation & Reference:
EuroACE
http://www.euroace.org/LinkClick.aspx?fileticket=3R8RB3xG_YU%3d&tabid=69
Instant payback time &
getting the proportions right

- Up to 5 – 10 % increase of productivity due to improved indoor climate

- Cost-benefit simulation = an annual increase in productivity can be worth min 10 times as much as the increase in annual energy and maintenance costs, when improving the perceived air quality in office buildings

- a pay-back time of only 4 months due to the productivity gains achieved.

Documentation & Reference:
Olesen, B. Productivity and Indoor Climate
http://activtek.eu/mx/lib/Bjarne_Olesen.pdf
Sustainia Sector Guide to Buildings
Additional costs of building sustainably

- The cost of building sustainably is often much lower than expected.

- Extra costs associated with 146 energy efficient buildings were between 0 and 3% compared to normal houses.

- The public perception is that building green would add an average of 17% to the cost of building.

Documentation & Reference:
Sustainia Sector Guide to Buildings
Cost savings not a matter of course

- Original 1954 house 102 m²
  - Extended retrofit 148 m²
    - Envelope energy upgraded
    - New extension added
    - Air-to-water heat pump
    - Solar thermal collectors
  - Premium retrofit 189 m²
    - PV cells added

Documentation & Reference:
Sustainia Sector Guide to Buildings
Look at costs in a life-cycle perspective

- Optimal costs is different than initial cost

- Quality is proven over time; to sustain = to last long; i.e. Invest in high quality, and maintain wisely

- Maintenance & production energy also reflected

- High initial investment could be long-term affordable

Documentation & Reference:
LCC tool for climate renovation / Wolfram Trinius
Sustainia Sector Guide to Buildings
Health benefits of energy efficiency

- Multiple benefits of energy efficiency of buildings

- 1 £ invested in Energy Efficient renovations can reduce public finances by £0.42

Documentation & Reference:
University of Ulster,
Kirkless Warm Zone, the Project and its Impact on well-being, University of Ulster, Liddell, Morris, Lagdon, 2011
Top reason for building sustainably

- Social factors rated as most important for building sustainable

- Greater health & well-being up by 88% as a top reason from 2008-2012

- Increased worker productivity tripled in impact rating

Documentation & Reference:
Many tools for energy efficiency - e.g. daylight

- Daylight can be the first tool for achieving energy efficiency

- Study by Henning Larsen Architects, Sattrup & Algreen analyses the combined effects of
  - Costs expenditure
  - Energy consumption
  - Daylight Factor

- Property value in cities are closely linked to daylight access

Documentation & Reference:
Hvad med dagslys?
http://www.dagslysrenovering.dk
http://da.velux.com/current_issue/insight_inside/koebenhavn
Conclusions 25.6.2013

- Tomorrows buildings are here today
  - We can build and renovate houses that fulfil 2020 targets with the products, knowledge and approach of today. Why wait?

- Several benefits and potential of sustainable buildings, climate renovation and energy efficiency
  - On jobs, productivity, promotion of health and well-being
  - extra cost of building sustainable is lower than typical expectations
  - Motivating factors comfort & well-being
  - minimise resource use, generate less waste
  - Improvement of indoor climate lead to higher productivity
  - Health benefits & public finances
  - daylight as a first tool to energy efficiency
  - Top social reason health & wellbeing
  - focus on performance throughout life-cycle
Read and view more

- VELUX demonstration projects, newsletter, blogs: www.velux.com/sustainable_living

- Active House newsletter & community: www.activehouse.info

- Film on daylight and climate renovation: http://press.velux.com/Stories/climate-renovation-demands-daylight/s/ce000d9a-84e6-4d65-980f-5471b8b543a1
Q & A

Sustainable Buildings  WHAT ARE THE BENEFITS ?
Lone FEIFER,
Programme Director Sustainable Living in Buildings,
VELUX A/S
Session 2

IT'S QUIZ TIME
EU Policies For Buildings - WHAT NEXT?
Pavel MISIGA,
DG Environment, European Commission
EU Policies for Buildings: What Next?

Pavel Misiga
Eco-innovation and Circular Economy Directorate General for Environment

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Resource use

40% of our final energy consumption
35% of our greenhouse gas emissions
50% of all extracted materials
30% of our water consumption
33% of total generated waste
Example of embedded energy

An investment of 100,000 Euros...

• ..in a photovoltaic panel would save 75 tonnes of CO2 over 30 years

• ..in low carbon concrete would save 663 tonnes of CO2 immediately

Which investment will be made?
Why this initiative now?

- **Resource efficiency roadmap, 2011**
  
  Existing policies, mainly on energy efficiency, need to be complemented with policies for resource efficiency looking at a wider range of resource use and environmental impacts, across the life-cycle of buildings.

- **Strategy for the sustainable competitiveness of the construction sector, 2012**
  
  Resource efficiency is a main challenge. Highlights areas for future development such as the assessment of the environmental performance of buildings.
Scope

- Environmental aspects of sustainability, i.e. "green buildings"

- Provide a holistic approach regarding resources and life-cycle impact of the sector.

- Resources to be looked at:
  - materials (including waste)
  - water
  - embedded energy

- Type of buildings covered:
  - residential
  - non-residential (excluding industrial buildings and infrastructure)
What actions are already taken?

- **Energy efficiency**
  - Energy Efficiency Directive
  - Energy Labelling and Eco-design Directives

- **Waste Framework Directive**
  - Review targets related to waste management

- **Member States**
  - I.a. regulate the calculation and reporting of environmental impacts
Objectives

- **Overall:**
  - Reduce environmental impacts by improving overall resource efficiency and, as a consequence, improve the related competitiveness

- **Specific:**
  - Raise awareness and demand among private consumers, developers and public purchasers
  - Improve knowledge and information on resource use
  - Remove barriers created by different sets of requirements on environmental performance
  - Improve material efficiency, including prevention and management of waste
Areas to be considered for future work

- Establish and promote an assessment framework for the environmental performance of buildings, taking into account the building as a system, building components and construction products.

- Provide information on the environmental performance of buildings to supply chain and clients.

- Recommend reporting requirements for buildings and components.
Areas to be considered for future work

- Establish comprehensive GPP criteria for different categories of buildings

- Advice MS in developing/reforming financial incentives for green buildings, including linking to the existing/emerging incentives for improved energy efficiency

- Promote efficient material management, in particular support markets for secondary construction materials
How to define green buildings?

- What aspects of resource use, beyond energy efficiency, should be taken into account?
- What knowledge do we need to develop a definition?
  - Do we have this knowledge or how could we get it?
Assessment approaches?

- How can the environmental assessment of a building be done in practice?
- What are the areas to be covered/indicators to be used?
  - How to take into account local conditions?
- What could performance levels, once known, be used for?
- Do cost-effective assessment schemes exist for the majority of buildings in Europe?
Incentives?

- How to tackle split incentives in the supply chain, i.e. uneven distribution of costs and benefits?
- Are incentives needed for green buildings?
  - Demand side? Supply side?
- What kind of incentives would be most cost-effective? At what level?
EU Policies For Buildings - WHAT NEXT?
Pavel MISIGA,
DG Environment, European Commission
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Session 3
Financing Models - WHICH ARE SUCCESSFUL AND WHY?

Alexander Paskov,
Johnson Controls
Financing – Financing Structures that Work

Alex Paskov
Director Structured Finance EMEA,
Johnson Controls International
Energy Solutions Financing Structures
Sale of Receivables / Forfaiting Model – executed

Description

- **Steps:**
  1. ESCO enters into Asset Purchase (and Maintenance) agreement with Customer
  2. ESCO enters into Sale of Receivables agreement with Finance Provider
  3. Customer makes fixed payments to Finance Provider
  4. Customer pays maintenance fees to ESCO

- **Assets:** Title held by customer, subject to liens

- **Accounting treatment:** On Balance Sheet for Customer

- Applicable for bundled retrofits
Financing Structures
Energy Services Agreement (ESA) - executed

Description

- **Steps:**
  1. Investors fund an SPV (OWCo)
  2. ESCO sells OWCo assets. JCI enters into Asset Purchase and Maintenance agreements with OWCo
  3. Customer enters energy service agreement (ESA) with OWCo for beneficial use of assets for fee based energy savings
  4. OWCo provides return to investors
  5. OWCo gets benefit of tax & environmental attributes

- **Assets:** Title held by OWCo with customer right to purchase, renew or remove at end of term

- **Accounting treatment:** Services Agreement - *Off balance sheet*

  Available for bundled retrofits and individual assets
Contact

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Q & A

Financing Models - WHICH ARE SUCCESSFUL and WHY?
Alexander Paskov,
Johnson Controls
FINANCING SUSTAINABLE BUILDINGS

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Conclusions:
Adrian Joyce, Secretary General, EuroACE
Information:
Lunch – Brasserie Van Maerlant

The Van Maerlant Building is opposite the Committee of the Regions’ building (CoR):

- Leave the CoR building
- Cross the road at the next traffic light
- Walk back down to the Van Maerlant Building
- Lunch will be served on the first floor.