

Energy Efficiency in Buildings Laboratory



REPORT



‘Sustainability is all between the ears’

Sustainable building developments in the Benelux depend on the right mindset. The technology is there, the knowledge is there, and in fact the business cases are there too. The big question is how the frontrunners in the Benelux can motivate the rest to follow their lead.

To find answers to this question, the World Business Council for Sustainable Development (WBCSD), Akzo-Nobel and a number of Dutch and Belgian partner organizations organized the Benelux Energy Efficiency in Buildings Laboratory on May 12 and 13 in Amsterdam. The venue was appropriate. The Edge, the

home of Deloitte, and the world’s most sustainable building opened its doors on May 12 for three types of residents: schools, offices, and living spaces. The following day, the host venue for the closing plenary meeting was the auditorium at the Rijksmuseum.

About the Lab

The Benelux EEB Lab is part of a worldwide program in which business leaders, investors, and policy makers come together in order to accelerate the development of sustainable buildings. The Lab is focused on the upscaling and renovation of housing, schools, and public and commercial offices. A market review conducted by Nyenrode plays an important role in this. Interviews with key players in the building industry were also conducted in April of this year. Using the information gathered from these interviews and the report, as well as the results of the meetings on May 12 and 13, the WBCSD and partners will continue the search for new opportunities and solutions to developing sustainable building environments in the Benelux.

The Edge

The thirteenth floor of The Edge gushes sustainability. The brand new building, with a Breeam-score of 98.36 percent is the most sustainable office building in the world. And to show how high the bar is now set, a spectacular film presented the impressive facts and figures which gave The Edge the word title. There are, for instance, 6800 light, motion and warmth sensors to ensure maximum efficiency and there are thousands of square meters of solar panels on the roof and the south side of the building ensuring an energy-neutral footprint.

There are very few buildings at the moment which could follow the same path as The Edge. But this should be seen as a challenge, said **Roland Huziker**, WBCSD Director of Energy Efficiency during his welcoming speech. The organization has conducted nine pilots globally to highlight the barriers that are faced in creating buildings such as these and find solutions to the obstacles. The pilots have been conducted in China, for example, but also in India, the USA, Brazil and Poland.

Nyenrode Business University was called in to identify barriers in

Belgium and the Netherlands. **Birgit Dulski** Nyenrode will present the results of this market study that focused primarily on the sustainability of existing buildings. The assignment was to put together a list of the top 10 hurdles, but, says Dulski, this was not feasible. “The obstacles are often related to each other, they cannot be seen as separate things.” Nevertheless, the interviews and research have yielded a balanced list of obstacles presenting barriers to sustainability in the building industry. [\[SEE FOR A SUMMARY OF THE BARRIERS PAGE 4\]](#)

Round tables

With these ten barriers in mind, the participants were divided into three groups: offices, schools and homes. They were charged with looking for solutions, new avenues and fresh perspectives.

For example, at the table with **Annemarie Rakhorst**, Founder of the engineering bureau and consultancy Search, representatives from a broad spectrum of companies in the commercial building industry have gathered round to discuss these issues.

From marketing psychologists, transition and innovation companies,

investment funds and project developers to sustainability consultants, architects and energy services companies, the conversation picks up where the introductory plenary session left off. The central question is, what are the barriers preventing sustainability in building environments?

“Often the best result is not being achieved because the construction industry thrives on word of mouth,” says one of the participants. “For example, John wants to put an extra floor on his property, so he talks

“ **The biggest barrier is in your mind** ”

to his friend Mike. Mike in turn approaches some subcontractors he knows. The best performance, for example in terms of sustainability, counts to a much lesser extent than

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Ten barriers to sustainability

Too little money

This problem is particularly acute in Belgium, said Dulski. In the Netherlands, the money does exist, but it is not used effectively.

Faulty communication

Especially a lack of knowledge exchange due to inadequate education or ineffective communication during projects.

Conservative mindset

A head full of fears has no space for dreams, adorns an image shown by Dulski. We need to have the guts to make change possible.

Unsupportive government

Many complaints are focused on the government, says Dulski. They are considered rigid, inflexible, fragmented, inconsistent, unclear and meddlesome.

Too little cooperation

There is cooperation, but it is not focused enough on joint innovation. Dulski explains that this is mainly due to a lack of skills.

Old buildings

A problem that is prevalent to a large degree in Belgium is that there are many old buildings and sustainability through renovation is a major challenge. The

historical value of the buildings should also be taken into account.

Uninterested owners

Not every owner is eager to renovate his building(s). There is insufficient awareness and too little attention to the benefits of energy efficiency.

Uninterested investors

For many investors, the return on investment (ROI) when making a building more sustainable is insufficient. Perhaps, says Dulski, clustering projects would help this situation.

Energy savings in operational phase

The investment costs play an important role here. There is simply too little interest in the subject.

Conflicting interests

Why would a landlord make his homes more energy efficient, if the tenant pays the energy bill?

Additional barrier

Sometimes, concluded Nyenrode, the focus is directed too much on energy. There are more factors that play a role when it comes to CO₂, such as water, waste, health and the use of materials.



the recommendation from Mike. “The solution lies in the contracts,” says a Belgian man at the table. “If you require energy performance to be added to the contract beforehand, then the contractor will be forced to follow the route to the best performing organization.” “

Well, I’m not so sure about that,” says another person at the table. “The building we are sitting in now did not come about because of technical or contractual solutions. It is a product of ambition.” “Let’s also not forget,” adds another, “that the profits that you can attain from high energy performance is minimal. Maybe 15 euros per square meter. This is another reason it is difficult to get other parties to move towards sustainability.”

“The biggest barrier is in your mind,” responds another. “Back in the nineties, people were making energy neutral buildings in Oslo. Innovation is quite exciting and when we are talking to each other, we should not start in the desert of impossibilities, but in the oasis of

solutions and opportunities. Connect the good examples, tell the good story.”

An investment representative had something to add to this comment. “Storytelling is important, but there are several issues that remain. Standardizing is often a problem, as is the high upfront costs and the red tape. We would like to see other parties take on their role in the

“**The tax on CO₂ emissions should be increased tenfold.**”

financing as well. If they do that, it would give more security and provide further opportunities.” “It is clear that we should leave the old system behind us”, says

the table chairman Rakhorst. “Best practices are needed, but facts and figures are as well. Scale and ambition are very important factors.” A personal note is added by Rakhorst as well: “As far as I’m concerned, the tax on CO₂ emissions should be increased tenfold.”

Building can be like coffee

Back in the plenary conference room, they start giving concrete translations to the many comments. “For effective innovation and renewal, current examples are essential,” says **Fred Nijland**, Director of innovation growth services at Deloitte. Good examples from home and abroad expand our vision and give new, good ideas. Nijland makes draws a comparison to the coffee industry, which has been completely turned upside down in recent decades. “Twenty years ago we were perfectly happy to get a cup of freeze-dried coffee in a restaurant; in 2015 our coffee drinking habits have been refined and are more varied; your cup of coffee reflects your lifestyle. Building can be like coffee!”, says Nijland.





The four example business cases

1 Sustainability of 40,000 homes in Enschede.

Scope: distribution costs, risks and benefits

2 Sustainability of old buildings in the Noord-Brabant region.

Scope: cooperation within the chain and a more flexible, alternative approach towards 'zero on the meter'

3 Replacement and sustainability of 160 schools in the Utrecht region.

Scope: complexity of financial regulation, limited financial capacity, distribution of costs, risks and benefits.

4 Office Area Amsterdam Sloterdijk.

Scope: further revitalization of this area, through new forms of cooperation.

But where do you start? Nijland had taken the book Business Model Generation with him, the world-famous method of Alexander Osterwalder. He did this to show that the business model behind your good story is what it is all about. Nijland discussed the three pillars: Who? – Who are your customers and which customers are most valuable to us? On whom do we focus? What? – What do we offer? What products and services do we provide and how unique are they? And how? – How do you conduct business and

what is your key to success? How do you work together? And how do you make money?

The participants all take these questions into consideration as they again disperse into groups. This time they will look at four business cases (see frame). One session focuses specifically on the financing of projects which were made possible, to a greater or lesser degree, by public money.

The discussion is led by **Gerard de Leede**, CTO at Heijmans, while eight experts from the science, housing and energy sectors pore over the business model to make the outdated buildings in North-Brabant sustainable. De Leede, as the physicist he is, first gives a brief insight into the developments in solar, wind, heat, construction and insulation. "Sun energy has evolved the most over the centuries," says De Leede. The business case is also simply to make a profit."

Little interest

There is sometimes a large gap between theory and practice. This is also known to the experts. Consequently, objections are soon brought into the discussion. Government policy is uncertain. Are write-offs an option? The tax disparity between gas and electricity is disastrous for scalability. Tenants have little interest in sustainability, and the investments required from housing associations is also not insignificant.

Solutions are also suggested. Greater cooperation between the construction and energy sectors, for example. Bringing in a trusted party who can regain consumer trust for the housing associations, for

example, by not thinking in partial solutions, but in total solutions. According to the experts, it is essential that there are good examples in the social housing sector. "You need to be able to bring a tenant with you and show him, "Look, you could be living like that." That works much better than a set of arguments about costs, sustainability and comfort which does not speak to the imagination."

One solution - which makes the whole thing financially even more attractive - can be to cluster renovation projects and approach wholesale markets with a comprehensive package. "In such a way you can save quite a bit on energy costs. And we're not talking about a mere few euros here."

Additionally, the experts think the energy market will soon stop talking in terms of kilowatt hours. "It has to do with how to deal with an increasingly flexible energy market. The flexibility that you unlock with the end-user is becoming increasingly more valuable. This is also necessary in the housing market and we should be investing in that."



Pitch Training: Tell your target audience about the 'How'

The various organizing parties of Deloitte-support have made 10,000 euros available for the case with the most potential. In a pitch of 2 minutes, three representatives may pitch their case in the auditorium of the Rijksmuseum.

Three parties, the municipality of Amsterdam, the municipality of Enschede and a collaboration

of the Economic Board Utrecht (EBU) and the Bureau Christian Education of Utrecht (BCOU) are prepped for their pitches by Frisse Blikken (Fresh Perspectives), a party that "supports organizations with modern challenges."

Together with the representatives, **Kevin Schuurmans** takes a look at some of the greatest speakers in the world; from Mar-

tin Luther King to Steve Jobs. The lessons: Show excitement, speak in metaphors, add a little humor, and always ask: 'What do I need from the listener?' World famous for the golden circle, Simon Sinek remarked "Many companies say what they do, but not why they do it. If you share the 'why', with potential customers, then you will be truly successful."

A handy tip is to create a catchy

sound bite. As Steve Jobs did with the introduction of the iPad – '1,000 songs in your pocket'. "That sticks, doesn't it? So, are you ready to give your pitch?" Asks Kevin. They may not be completely confident yet, but that comes naturally, says Kevin. "Practicing helps. You should also practice in front of the mirror."



A little less conversation?

The atmosphere for the closing plenary could not have been better. In the central hall of the bustling Rijksmuseum and in the auditorium, the participants of the Benelux Energy Efficiency in Buildings Laboratory reflected on the discussions held yesterday while they are looking forward to the full and inspiring program that awaits them.

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Chairman **Mark Beumer**, who works at the science network Het Groene Brein, reminds the attend-

ees once again that the EEB Lab revolves around solutions. A little less conversation, a little more action.

Ninety trillion dollars

For the first speaker, **Peter Bakker**, president of the World Business Council for Sustainable Development, this sounds like music to the ears. "Over the next fifteen years, the world will invest over ninety trillion dollars in infrastructure. If we do this in a sustainable way, we could make the world greener with

no additional cost. If we act now," Bakker says, "we can reduce energy consumption in buildings by fifty percent by the year 2030."

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According to the WBCSD spokesman, the leading role in this endeavor is reserved for businesses. Bakker points to Silicon Valley, where technical innovation facilitates better performance on a daily basis. "Think of Tesla, which just introduced the Powerwall, a super battery that can store enough energy to heat and illuminate your house even when the sun has gone down.

It's very simple. You need to set yourself a goal. What would happen if my building consumed fifty percent less energy? Look around you and you'll see that there is a lot of knowledge available. It can sometimes be astonishingly easy to make a building sustainable.

Coen van Oostrom,
CEO OVG Real Estate



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A company that is definitely interested in contributing to a sustainable future is AkzoNobel, project leader for the Benelux EEB Lab. “We are quite active,” said CEO **Ton Büchner**. “And we have become absolutely convinced that we cannot and must not wait for the government.” With their paints, coatings and chemicals, Akzo is active in almost all conceivable industries. “We see tremendous potential in terms of building environments. An energy reduction of 50 to 75 percent can be achieved through extensive retrofitting and with this approach, a huge market opens to us.”

Comprehensive vision

AkzoNobel has entered this market with, for example, reflective paint. The paint increases the reflection of light and thus reduces energy consumption. They have also introduced bacteria-resistant coatings. “Sustainability is more than just energy. In that regard, much remains to be done”, says Büchner. “A comprehensive vision and approach is often still lacking, while it is that overall picture that can bring us more and take us further.”

After Büchner the floor is given to **Jeroen Zuidgeest** from MVRDV Architects, a global architectural firm in Rotterdam. He paints a picture for the audience of the city of the future. Are we moving towards an inclusive city? Or are we creating buildings of four by four kilometers which are completely self-sufficient? Mark Frequin, Director General for Housing and Construction at the Ministry of Interior discusses

with the audience the dilemmas, questions and opportunities that he as a representative of the government runs into. Peter Verley from AG Real Estate Belgium knows the ins and outs of an ambitious project to make hundreds of schools in Belgium sustainable. The project Schools of Tomorrow.

Comfort

“The customer is totally not interested in energy efficiency” said **Marc Calon**, Chairman of the housing corporation umbrella Aedes. “What the customer is interested in is his comfort and the energy bill. If you can guarantee that the customer’s energy bills will decrease and his comfort will increase, then you will achieve results much faster than trying to convey to him that change is needed because of the environment.”

Beumer introduced **Coen van Oostrom** as the last speaker of the day. The developer of The Edge can certainly call himself one of the most sustainable project develop-



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ers in the world. “But you need to re-prove yourself every day,” says Van Oostrom, who “converted” to sustainable entrepreneurship after listening to a speech by Al Gore.

Real estate technology

“The Edge is an outstanding example. The integration of the connected lighting system is a great new innovation that we were able to create together with Phillips. That was a considerable challenge, but was also a direct investment in our proposition. OVG is no longer real estate alone, we are real estate technology.”

And that movement stands for a much needed broader development according to Van Oostrom. “You could say that the construction industry is conservative, but that holds true in fact for the whole world. We need to work together towards finding new sustainable avenues for building environments.”

Forty percent of the energy is consumed in buildings. With the technology available today, and with business cases that have already proven profitable, you can reduce this consumption by 60 to 80 percent. This means that we have the opportunity to save as much as 20 percent of the total global energy consumption.

Peter Bakker, president World Business Council for Sustainable Development



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A comprehensive vision is essential. Sustainability in building environments cannot be seen as separate from sustainability in our economy as a whole. All assets are essential: social, environmental and financial. Only an integrated approach can pull our economy out of the red and achieve a positive impact on the bottom line.

Marga Hoek, Director De Groene Zaak

And the winner is...

Eighty percent of the schools in the Netherlands do not meet the criteria for a healthy classroom. Making 160 schools in Utrecht sustainable is therefore an excellent idea, says Chantal Broekhuis from the Foundation Protestant Christian Education in Utrecht.

Jeroen Hatzenboer calls for sustainable building constructions for 40,000 homes in Enschede over the next fifty years. That counts for more than half of city. It is a considerable task for Hatzenboer: to make the current situation and the impact of sustainability visible. For the government, but also for the 140,000 inhabitants of Enschede. Sloterdijk

Ellen Nieuweboer from the Amsterdam municipality has big plans for Sloterdijk, specifically for the

business districts. Things are not exactly flourishing there in 2015. “The human dimension needs to return to the neighborhood,” says Nieuweboer. We need to bring color to the neighborhoods, make connections and bring the human element back.” Mark Beumer, asks the audience to please vote now, as

the phone screens light up. Beumer soon announces the results. **Chantal Broekhuis** may invest the **Deloitte-support award of 10,000 euros into her project.** “This allows us to facilitate the action that we have been talking about,” says Beumer. “Less conversation, more action.”



