

**Webinar | Thursday 14 October 2021, 10:30 - 12:00**

# **THE EPBD REVISION: HOW TO MAKE THE BUILDING STOCK DECARBONISED, ENERGY-EFFICIENT AND HEALTHY THROUGH SMARTNESS**

With Pernille Weiss, Bonnie Brook, Nils Meinert,  
Ourania Georgoutsakou and Jonathan Volt



**#SmartBuildings  
#EUSEW2021**

# 14 OCTOBER 2021 - THE EPBD REVISION: HOW TO MAKE THE BUILDING STOCK DECARBONISED, ENERGY-EFFICIENT AND HEALTHY THROUGH SMARTNESS



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*Managing Director at Johnson Controls  
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*Member of the European  
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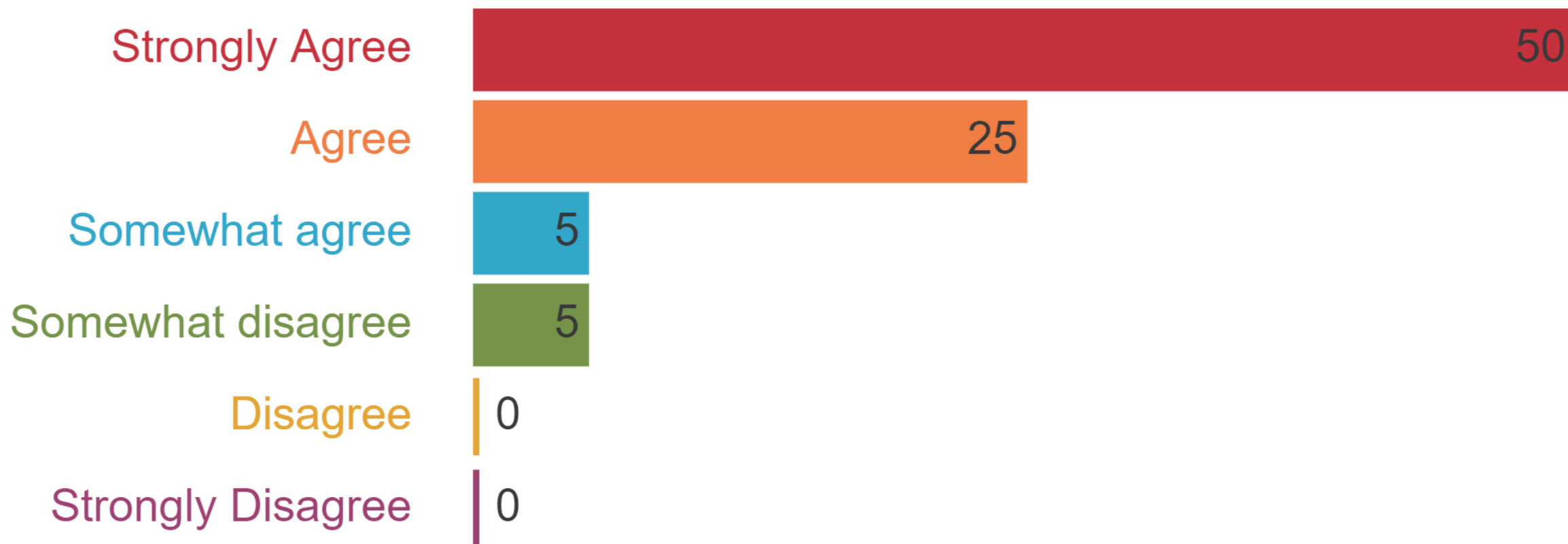
*Project Manager  
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# Smart technologies in buildings are essential for Europe's decarbonisation



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**THE EPBD REVISION:  
HOW TO MAKE THE BUILDING STOCK DECARBONISED,  
ENERGY-EFFICIENT AND HEALTHY THROUGH SMARTNESS**



**Nils Meinert**

*Managing Director,  
Johnson Controls  
Building Efficiency,  
member of eu.bac*

**RENOVATING EUROPEAN  
BUILDINGS WITH COST-EFFECTIVE,  
ACTIVE ENERGY EFFICIENCY  
SOLUTIONS**

**BELIMO**

**CENTRA  
LINE**  
by Honeywell

*Danfoss*

**DELTA  
DORE**

**DISTECH  
CONTROLS**

**SAUTER**  
Creating Sustainable Environments.



**Honeywell**

**CALEFFI**  
Hydronic Solutions

**COMAP**  
SOLUTIONS FOR EFFICIENCY

**Frese**

**Herz**

**IMI**  
Hydronic Engineering



Johnson  
Controls

**LOYTEC**

**Kieback&Peter**

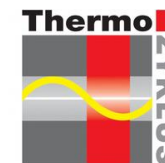
**oventrop**



**sbc**  
SAIA BURGESS CONTROLS

**Schneider  
Electric**

**somfy**



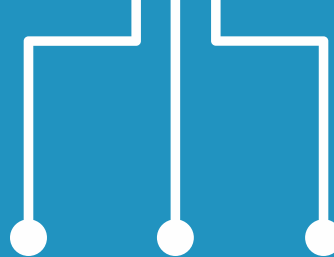
**TRIDIUM**

**SIEMENS**

**TREND**

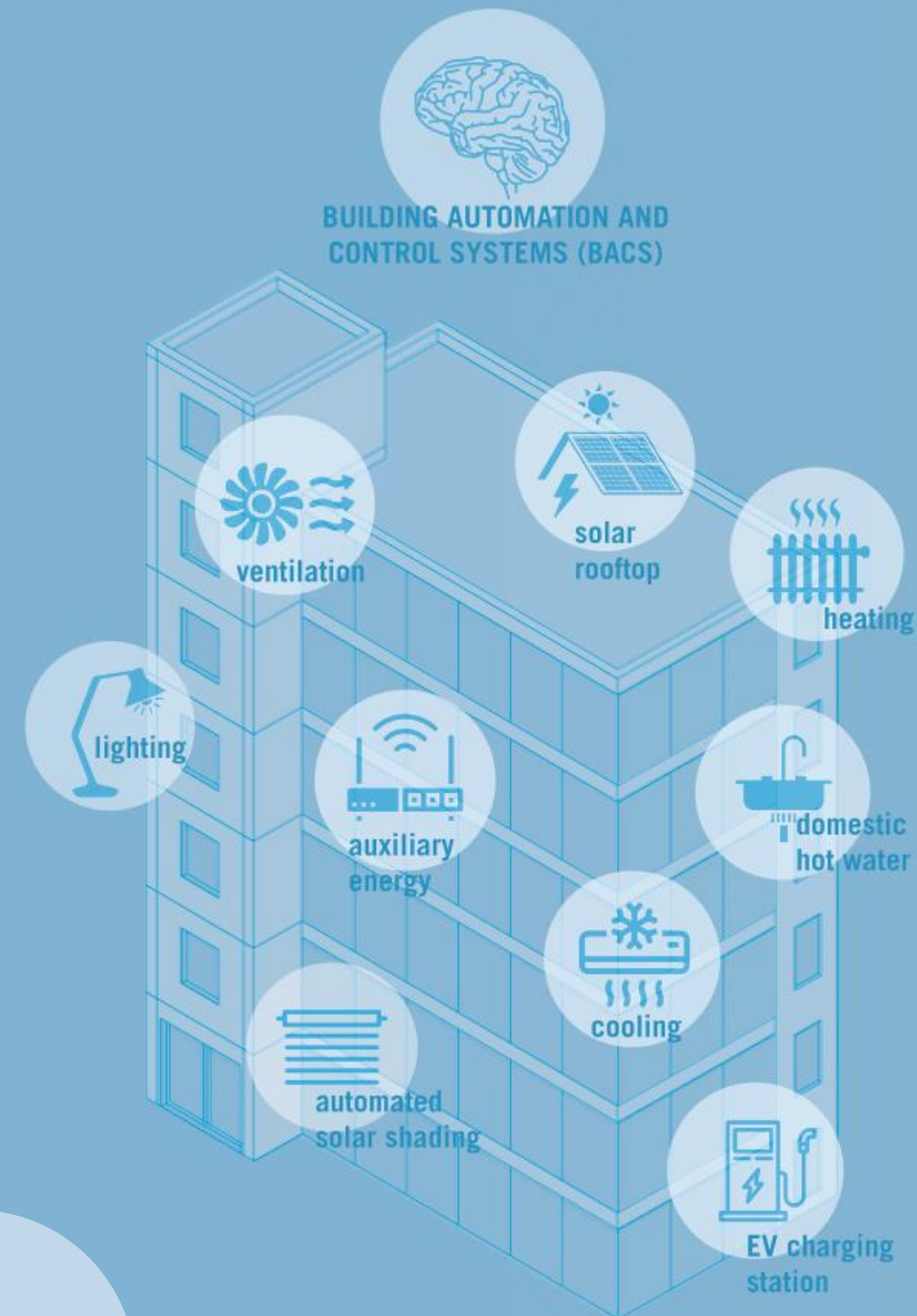
**WAGO**

"A world where energy-efficiency and sustainability  
in every building is achieved through the optimal  
application of home and building controls,  
automation systems and services."



# WHAT ARE BACS?

- BACS (Building automation and control systems) refer to the products that **monitor** and **automatically adjust the energy using technologies** in our homes and buildings to deliver a comfortable environment, while optimising the energy use
- Building automation and control solutions can range from **thermostatic valves on our radiators** to **advanced building management systems in large buildings**.
- BACS – “**brain**” of the building, able to ensure **integration** and **optimal functioning** of TBS, avoiding malfunctions and TBS working against each other
- BACS - “**intelligent nodes**” of the smart integrated energy system developed around the building. **Demand response, consumption prediction, energy storage, management of distributed generation of renewables** (e.g. solar rooftop PV) are all “smart functions” strongly connected to an optimal functioning of the building.
- Building managers have **real-time access to cloud-based analytics, reporting and services**, allowing for informed decision making.





# POTENTIAL BENEFITS

BACS can reduce thermal and electrical energy consumption up to:



Cost-effective technologies with short payback time:

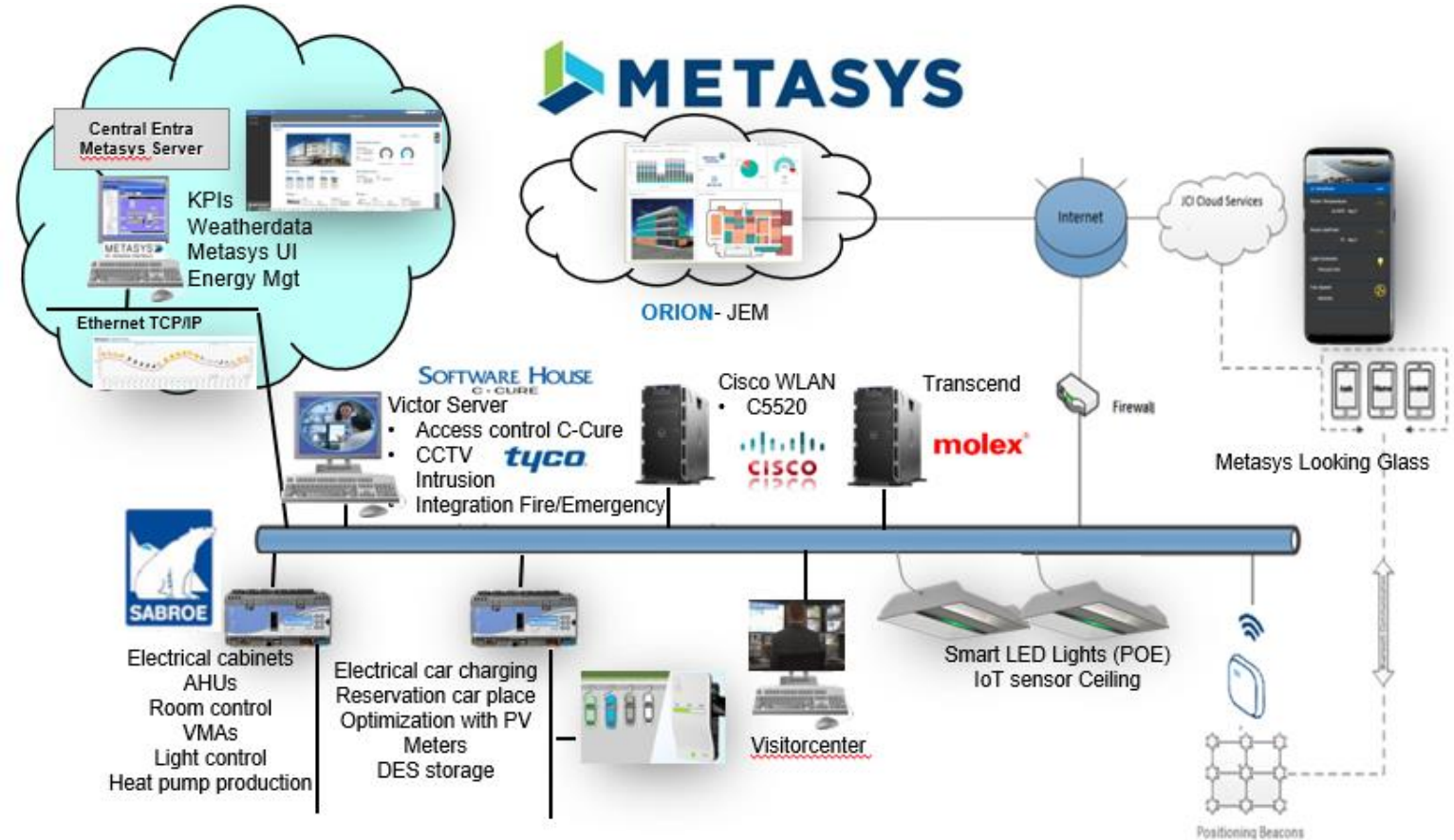


Appropriate implementation of the BACS related policy measures in EPBD will save **14% of total building primary energy by 2038**

*Waide study* "The impact of the revision of the EPBD on energy savings from the use of building automation and controls"

*EN15232 standard* "Energy Performance of Buildings – Impact of Building Automation, Controls, and Building Management"

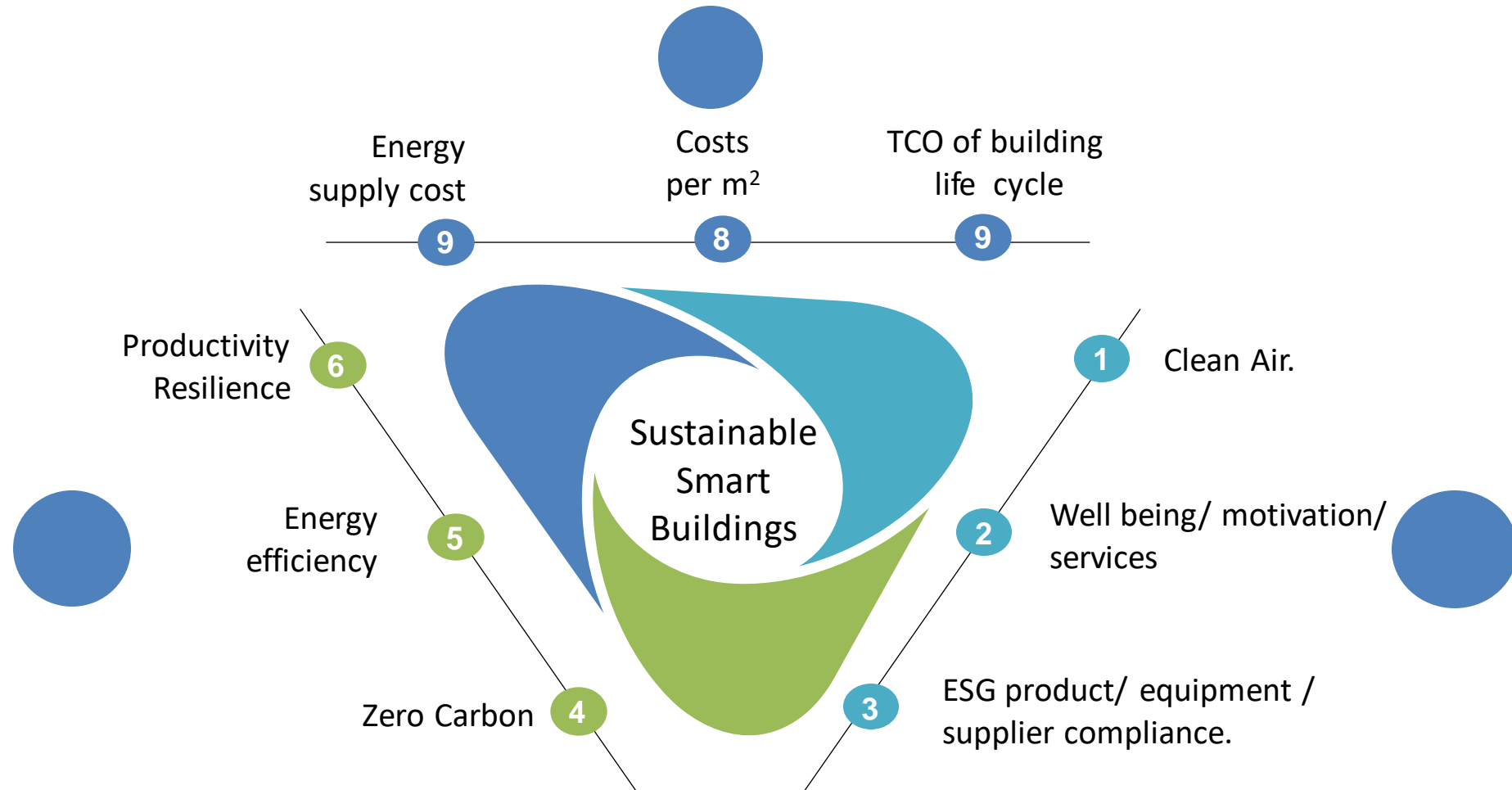
# SMART BUILDING POWERHOUSE BRATTØRKAIA (NORWAY)







# DIGITAL ( AI, ML) IS A KEY TO MANAGE A COMPLEX TRIANGLE CHALLENGE TO SUSTAINABILITY; WE NEED TO LEARN FOR INNOVATIONS



#EUGreenDeal

# EU.BAC POSITION ON THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE



- First, we stress the importance of implementing the existing revised EPBD. We have supported the implementation through [preparing guidelines](#) and a [BACS compliance verification checklist](#)
- Energy efficiency should define the indicators for successful building policy
- Digitization can be the driving force of the renovation wave



# SMART, DIGITAL AND DECARB

## 01 DIGITALISATION IN MEPS

Minimum Energy Performance Standards (MEPS) must include digitalisation

measures to ensure that the innovation wave delivers smart proof and smart grid buildings. The standard must include basic demand response, actual energy performance and indoor climate quality parameter monitoring, reporting and verification.



## 02 MANDATORY SRI

Mandatory Smart Readiness Indicator (SRI) above a certain energy consumption threshold to ensure wide market adaption and effectiveness of the label. Public buildings should lead by example.

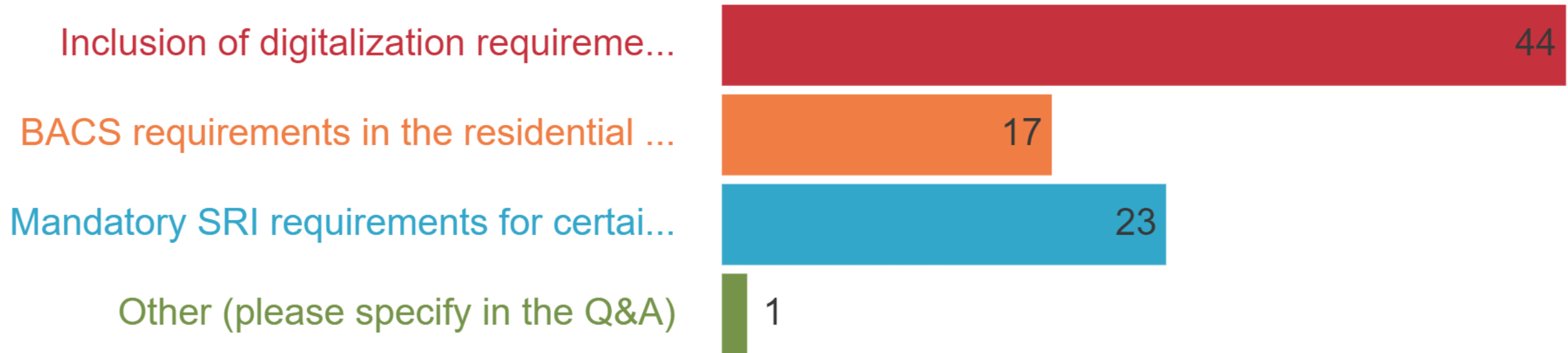
## 03 EXTEND BACS REQUIREMENTS

Mandatory minimum BACS requirements in Residential buildings with an effective rated output of > 70kW. Extend the existing requirements for non-residential buildings to an effective rated output of > 70kW.



THANK YOU!

## Which measure in the revision of EPBD is key to unlocking smart capabilities in the EU building stock?



# THE EPBD REVISION: HOW TO MAKE THE BUILDING STOCK DECARBONISED, ENERGY-EFFICIENT AND HEALTHY THROUGH SMARTNESS

**Ourania Georgoutsakou**  
Secretary General of LightingEurope

## The role of lighting systems in energy efficient and healthy buildings



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# Our Members



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SIMPLY YOUR LIGHT

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die Elektroindustrie

# Our Vision



**LIGHTINGEUROPE**  
THE VOICE OF THE LIGHTING INDUSTRY

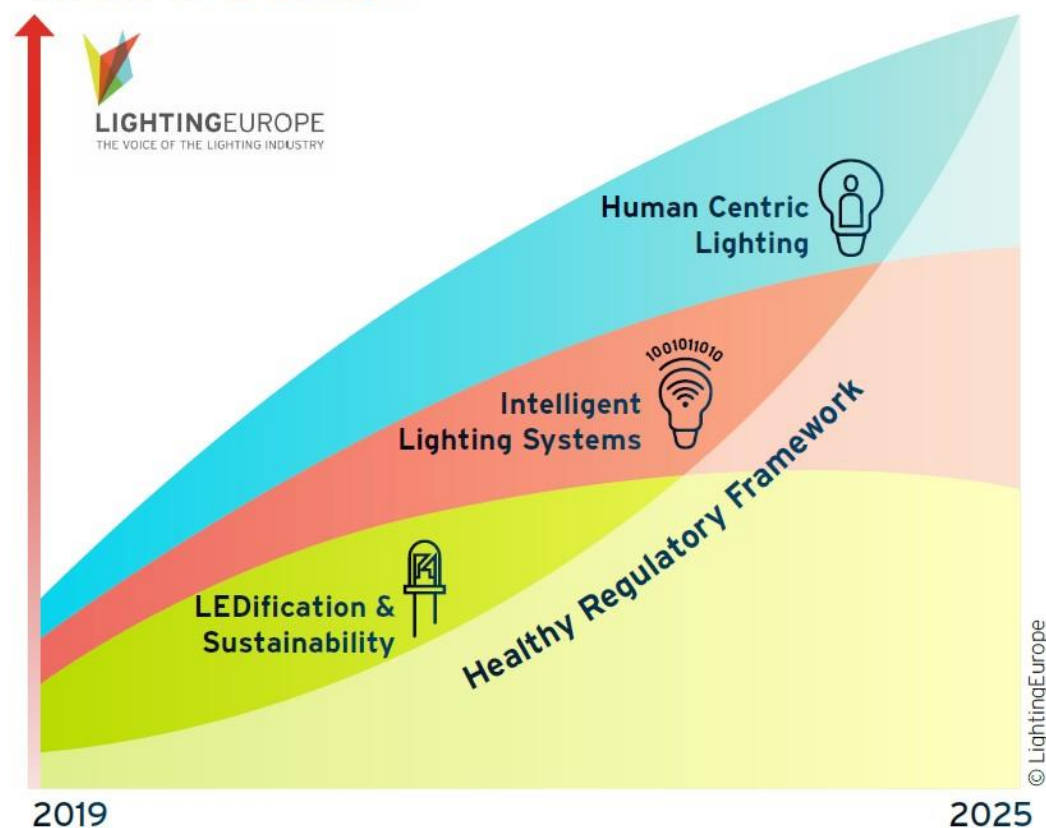
LightingEurope has made progress in achieving the lighting industry's Strategic Roadmap to grow the **Value of Lighting** by 2025.

The lighting industry is harnessing the potential of **LEDification** and **Sustainability** and is delivering energy efficient and sustainable lighting products.

The increased **Value of Lighting** to society will come from **Intelligent Lighting Systems** and **Human Centric Lighting**.

The European lighting industry is working with European legislators to ensure a **Healthy Regulatory Framework**, with simple, sound rules that are better enforced, to foster growth in the market and for people.

## VALUE OF LIGHTING



Create long-lasting value for  
people & the planet



Buildings account for :



➤ **40%**  
of energy  
consumed



➤ **36%**  
of energy-related  
greenhouse gas  
emissions



## Lighting delivers significant energy savings

New EU ecodesign & energy labelling rules for light sources will save **7 million tonnes of CO2 equivalent a year by 2030**

European Commission, 31 August 2021



By switching from incandescent lamps to energy efficient LED lamps, Europeans have benefited from up to 90% savings



**FIND OUT MORE**  
[www.europeanlightingpriorities.eu](http://www.europeanlightingpriorities.eu)  
[www.lightingeurope.org](http://www.lightingeurope.org)

**LIGHTINGEUROPE**  
THE VOICE OF THE LIGHTING INDUSTRY

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# Prioritising applications & systems can take us further



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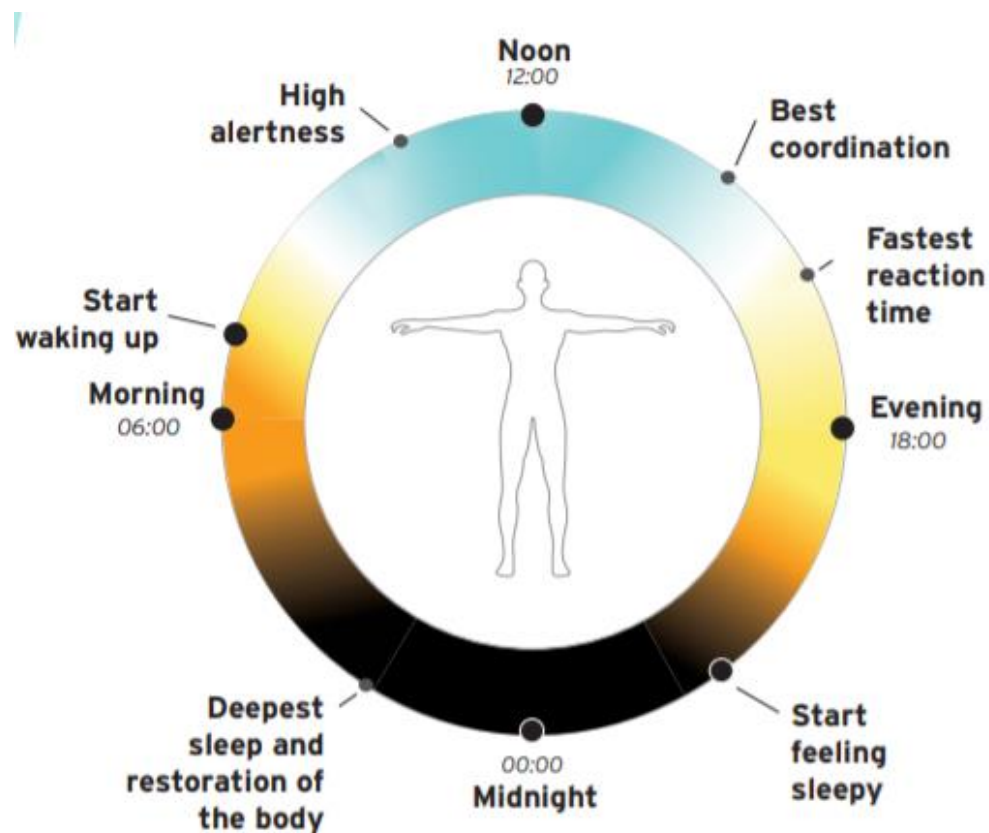
The maximum EU-28 **total annual electricity savings** for optimized lighting system designs with controls (depending on the reference light source scenario) are:



(for reference: EcoDesign (EC)245/2009 on tertiary sector lighting products saving potential is **38 TWh/year** in 2020)



The Nobel Prize in Physiology or Medicine 2017 helped to explain the mechanism by which light can synchronize the 24-hour body clock.





# Better Lighting for people

## Human Centric Lighting



**LIGHTINGEUROPE**  
THE VOICE OF THE LIGHTING INDUSTRY

### Light has an effect on



#### **Vision**

*Sight, safety and orientation*



#### **Body**

*Alertness, cognitive performance  
and sleep/wake cycle*



#### **Emotion**

*Mood, energize and relaxation*

We need the **right light** for our  
activities at the **right place** at  
the **right time**



Wake up



Energize



Concentrate



Relax



Sleep

Each lighting application has its own  
specific needs



Office



Factory



School



Elderly  
Home



Hospital



# LED Lighting Systems delivering Human Centric Lighting



Lighting system includes dynamic light changing light temperature throughout the day to mimic natural daylight cycle. LED tech allows regulating from warm to cold light.

Early in the morning, lighting color is progressively regulated to cool 5500K. Late in the afternoon a warmer 3500K is also programmed.

Daylight sensors regulate electric light to min 600 lux at working plane. Presence sensors and manual switches allow personal adjustments

Meeting rooms: color temperature is 4000K & initial lighting level of 400 lux can be regulated freely. Includes presence sensors.



**GMP' OXXEO building rented by Capgemini, Madrid, Spain**

For more information and other applications: <https://www.valueoflighting.eu/applications.html>

# Benefits of smart systems enabling dynamic tunable lighting

## Benefits for people in healthy buildings due to lighting



Employees  
in office perform up  
to **12%** better



Workers productivity  
increases by up to  
**18%**

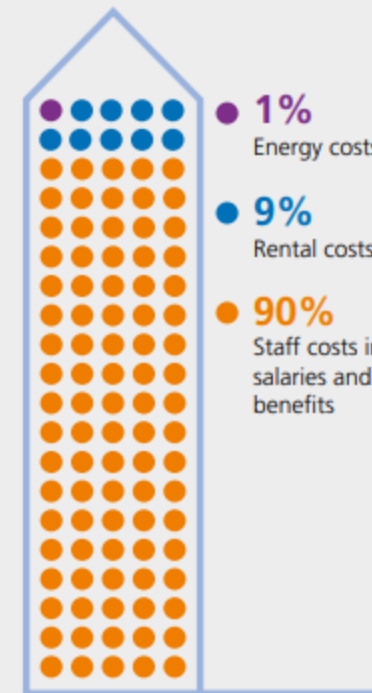


Students achieve  
up to **14%**  
higher scores



up to **25%**  
increase in retail  
sales

## Typical business operating costs<sup>1</sup>



### 10% Variation

A 10% variation applied  
equally to each cost has a far  
from equal impact

**+/- 0.1%**

Energy costs

**+/- 0.9%**

Rental costs

**+/- 9.0%**

Staff costs

© WGBC, September 2014



# Key Recommendations for the EPBD & Renovation Wave

Set requirements to ensure the **smartness of buildings**. Mandate the use of **automatic lighting control systems in non-residential buildings**.

Set requirements to ensure a **harmonised application of the smart readiness indicator (SRI) across Europe**

Set requirements for **the inspection of lighting systems**

Set **mandatory minimum requirements for IEQ, including lighting** - Instructions for lighting in EN12464-1

**Access to public financing** should be subject to **certain conditions** e.g. for lighting:

- Compliance with EN12464-1
- Minimum SRI level

Ensure the **enforcement of Member States' Long-term Renovation Strategies (LTRSs)**



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# THANK YOU

**Ourania Georgoutsakou**  
*Secretary General*

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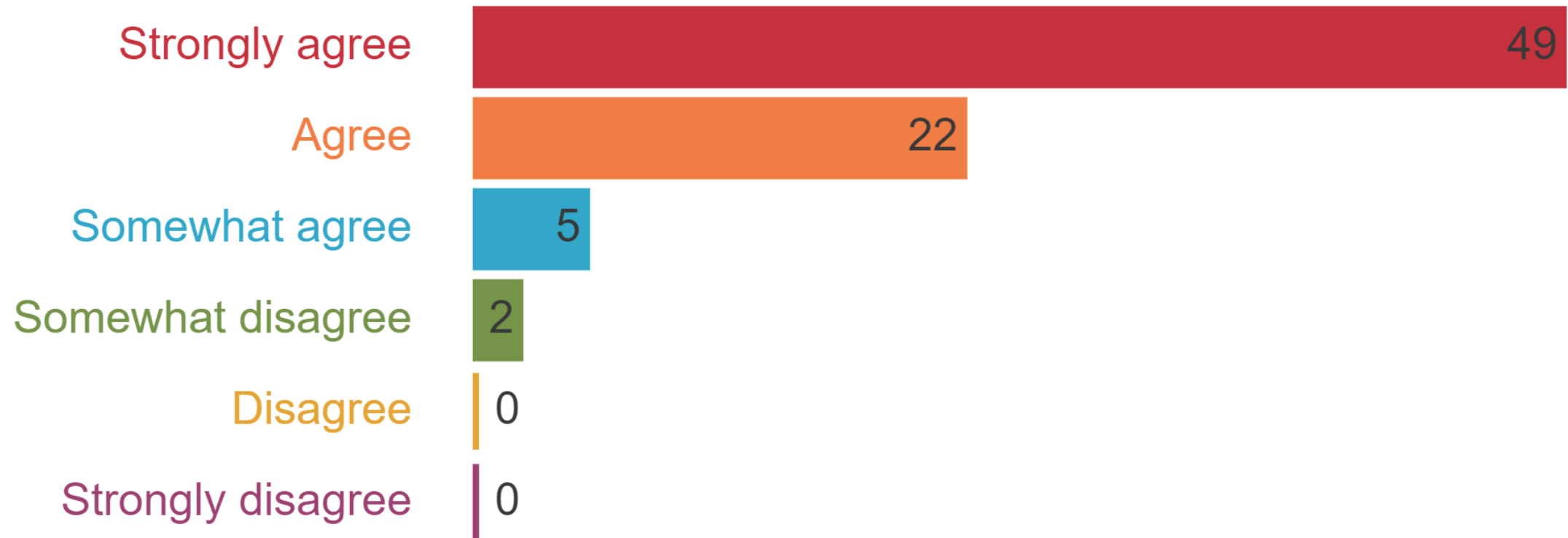
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**Smart technologies in buildings are essential for a better indoor environmental quality. The revision of the EPBD should go beyond energy efficiency and also address Indoor Envi...**



# OPENING THE DOOR TO SMART BUILDINGS



## THE ROLE OF SMARTNESS IN THE RENOVATION WAVE

14/10/2021


Jonathan Volt

eu.bac  
EUSEW2021 Webinar





# CLIMATE AND BUILDING POLICIES ARE PICKING UP SPEED



Raising the climate target to at least -55% GHG reductions until 2030



## Renovation wave with action plan (14 October 2020)

- At least doubling the renovation rate from 1% to at least 2%

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives

{SWD(2020) 550 final}

# CONCURRING DRIVERS OF CHANGE

The Renovation Wave coincides with other drivers of change for our built environment:

- Digitalisation
- Electrification
- Intermediate RES
- Servitisation
- Data, data, data
- Climate movement

IT'S INDEED GETTING **HOT** IN HERE



# ONE WAVE: 8 LEAD ACTIONS AND INTERVENTIONS

Most relevant EU Directives that will be revised in 2021:

- ✓ Energy performance of Buildings Directive (EPBD)
- ✓ Energy Efficiency Directive (EED)
- ✓ Renewable Energy Directive (RED II)
- ✓ EU Emissions Trading System (ETS)



# POTENTIAL SMART ANCHORPOINTS

- ✓ Smart Readiness Indicator
- ✓ Digital Building Logbooks
- ✓ Upgraded Energy Performance Certificates
- ✓ Upgraded NZEB
- ✓ Building Renovation Passport
- ✓ MEPS?
- ✓ Electro mobility
- ✓ District approaches

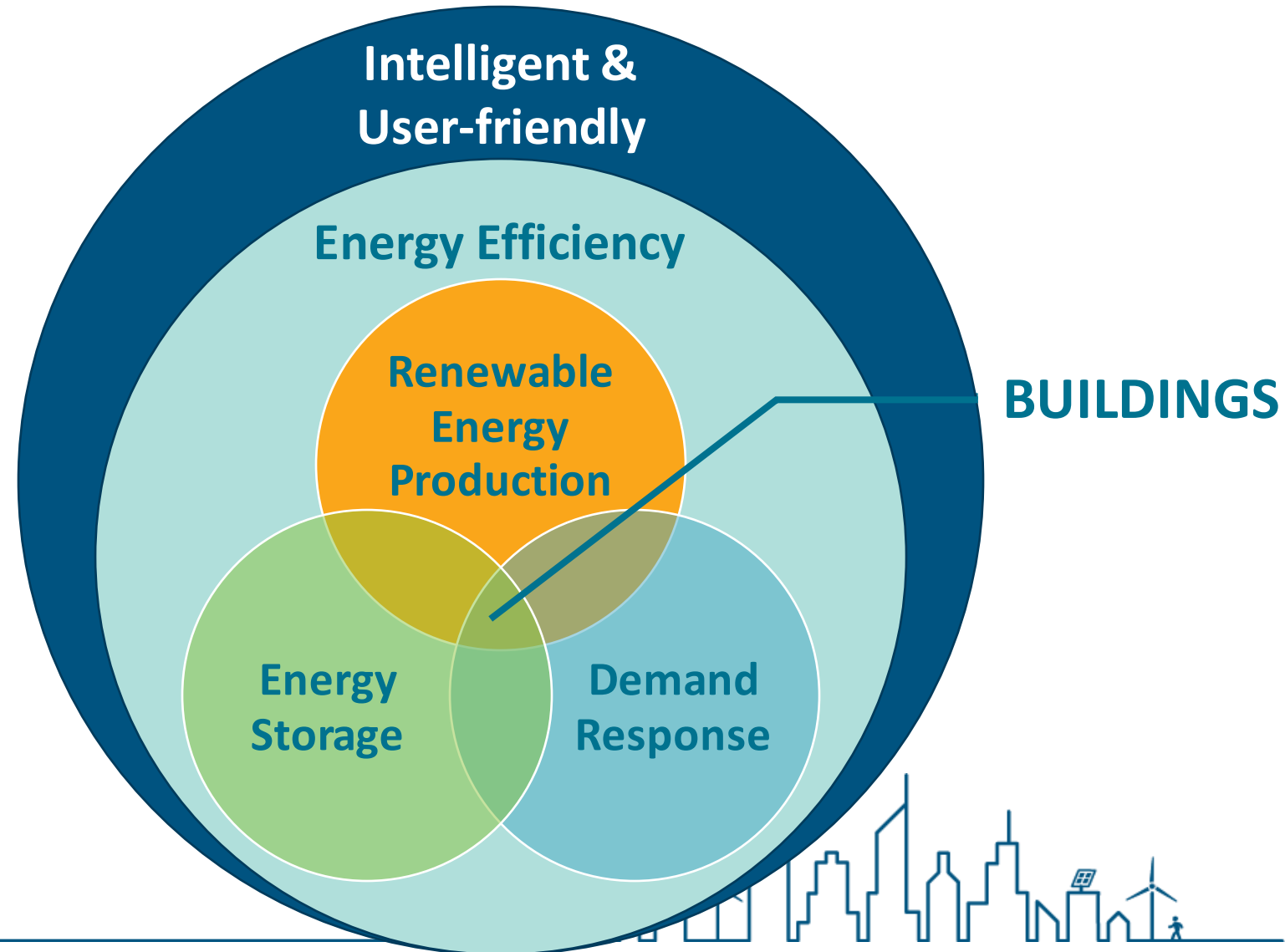




# THE ROLE OF BUILDINGS

Renovation Wave won't be successful if it

- addresses buildings as stand-alone structures
- doesn't utilise the potential of "micro energy hubs"
- doesn't build on real and reliable building and energy data
- doesn't enable smart energy services to take off



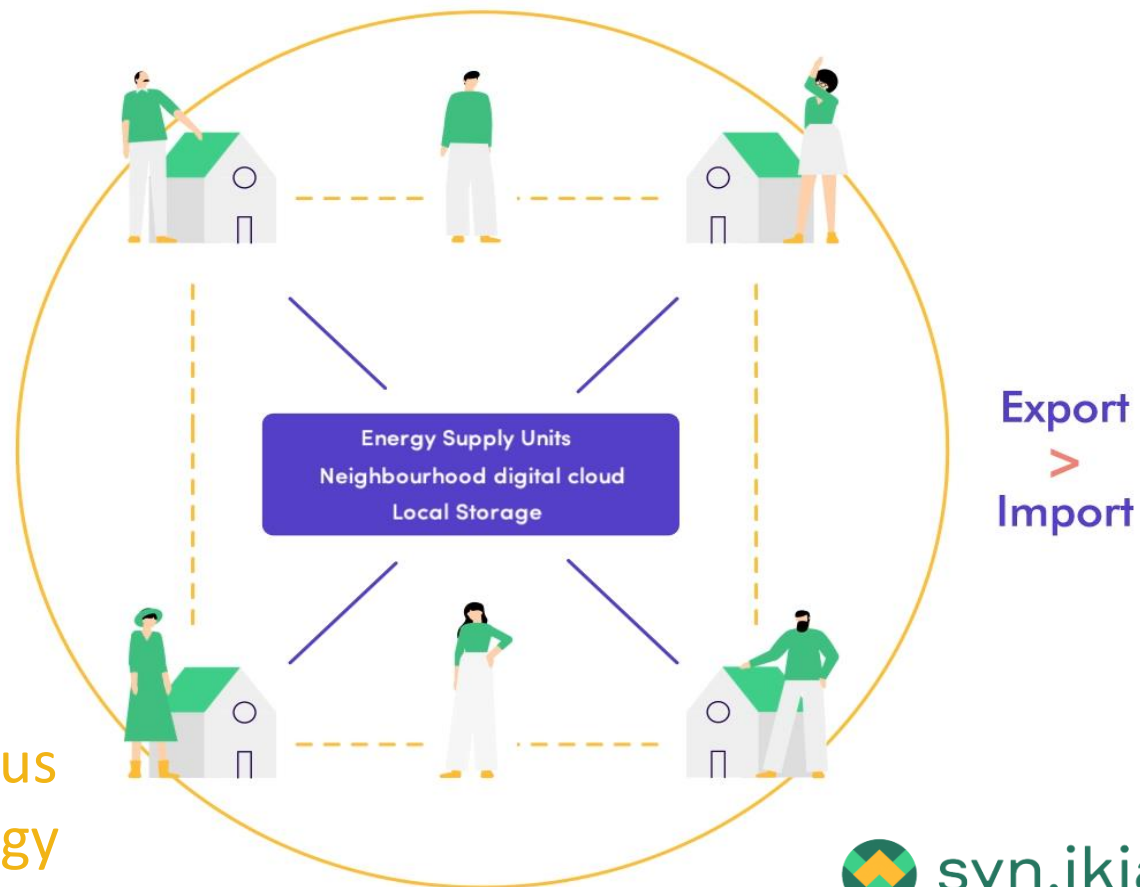
**BUILDINGS**

# FROM BUILDINGS TO DISTRICTS

Plus Energy Building



Sustainable Plus  
Energy  
Neighbourhood



# OPPORTUNITIES WE CANNOT AFFORD TO MISS



# INTEGRATION OF BUILDINGS INTO THE WIDER ENERGY SYSTEM

- ▶ Definition for positive energy neighbourhoods
- ▶ Support and require local authorities to develop long-term district plans
  - E.g. Mandatory energy transition scan for neighborhood when including an infill development project
  - Use Living Labs to enable new technologies to be tested, but especially to align their interaction with other technologies and services

- ▶ New buildings could be required to have active energy management and storage solutions

**20th of October!** Register: <https://www.energyville.be>

OPEN LAB PROJECT - PUBLIC LAUNCH - LEADING THE TRANSITION TO POSITIVE ENERGY NEIGHBOURHOODS

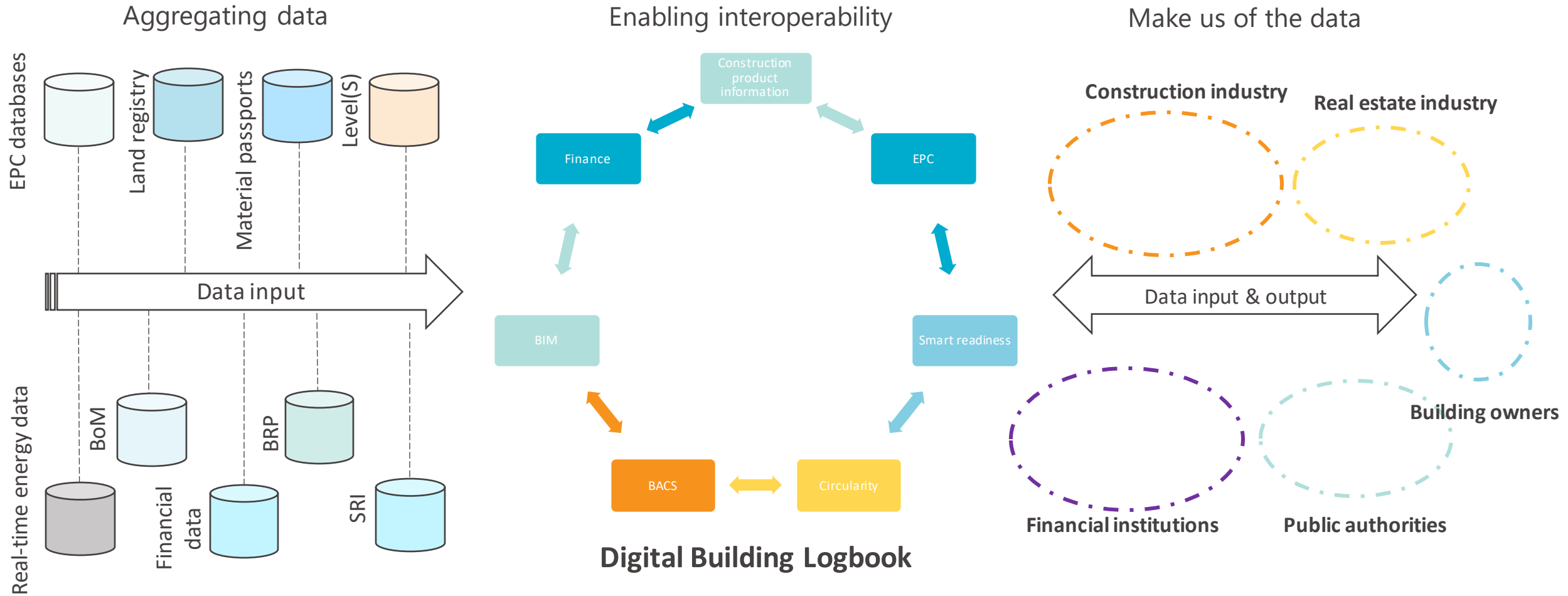


OPEN LAB  
Leading the Transition to  
Positive Energy Neighbourhoods

*oPEN LAB is funded under European Union's Horizon 2020 Research*



# CROSS SECTIONAL USE OF DATA



# MAKE ROOM FOR NEW BUSINESS MODELS

- ▶ Enable the use of real-energy data and pricing
- ▶ Facilitate energy communities through peer-to-peer energy sharing and flexibility trading
- ▶ Break down the legal barriers to demand response practices
- ▶ Roll-out BACS capabilities in (larger) residential buildings
- ▶ Support aggregation of demand to facilitate large scale renovation projects, financing and prefabricated solutions





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## What should be the first action(s) for the EU to enable the uptake of positive energy districts (PED)?





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**THANK YOU!**



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