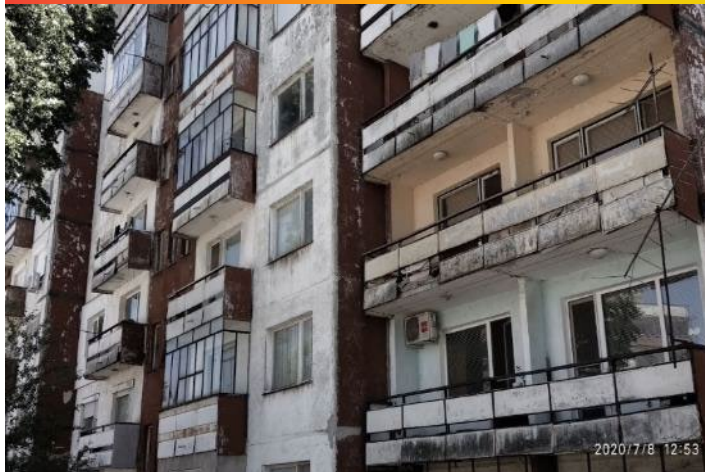


LEARNING APPROACHES FOR NEW GENERATION EPCS AND SMART READINESS INDICATOR: AN INVITATION FOR DISCUSSION



BUILD UP Skills EU Exchange Meeting

Dragomir Tzanev, Center for Energy Efficiency EnEffect

Brussels, 26.10.2023



Next Generation Energy Performance Certificates cluster

2019



2020



2021



2022



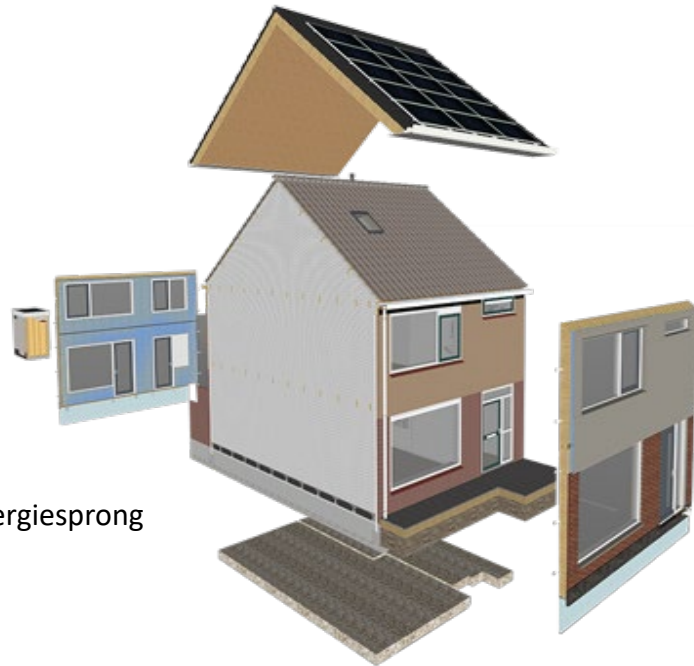
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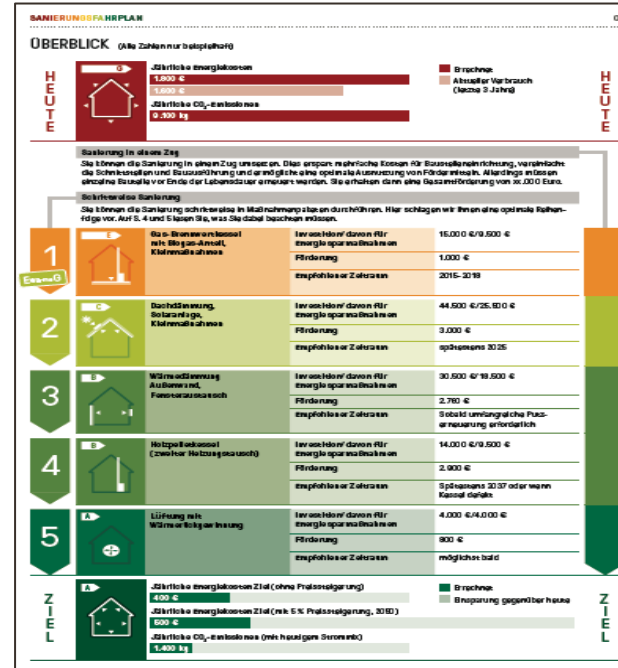
DEEP AND QUALITATIVE RENOVATION

HOLISTIC RENOVATION PROCESS

BUILDING RENOVATION ROADMAP



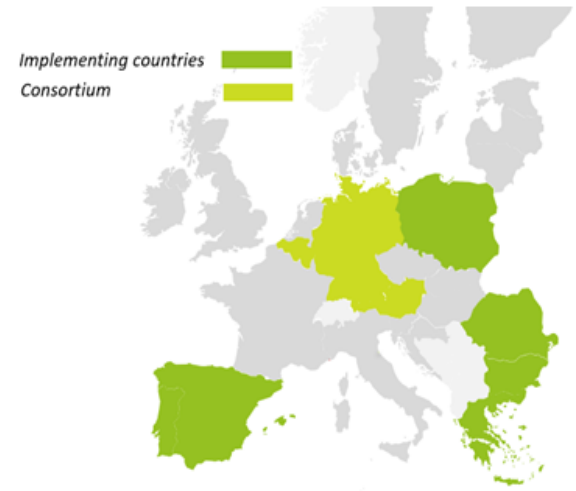
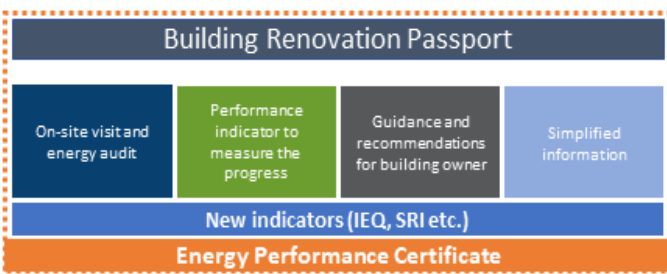
Source: Energiesprung



Source: ifeu

iBROAD2EPC

Innovative solution
 Building segment
 Implementing countries



	ENERGY CLASS C	ENERGY CLASS B	ENERGY CLASS A	ENERGY CLASS A+
	Your Building Moment of delivery	Renovation Step 1	Renovation Step 2	Renovation Step 3
Measures		External financing • External Wall insulation • Substitution of the old windows • Roof insulation	Measures • Insulation of the cellar ceiling • Substitution of the heating system by a heating pump	Measures • Installation of a heat pump for domestic hot water • Installation of a heat recovery unit • Installation of a photovoltaic system
Energy Use	Primary Energy Demand 283 kWh/m ² Main Energy Source Oil Final Energy Demand Main Source 180 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 12 kWh/m ²	Primary Energy Demand 206 kWh/m ² Main Energy Source Oil Final Energy Demand Main Source 110 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 14 kWh/m ²	Primary Energy Demand 103 kWh/m ² Main Energy Source Electricity Final Energy Demand Main Source 7 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 13 kWh/m ²	Primary Energy Demand 31 kWh/m ² Main Energy Source Electricity Final Energy Demand Main Source 4 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 6 kWh/m ²

	ENERGY CLASS G	ENERGY CLASS F	ENERGY CLASS B	ENERGY CLASS B
	Your Building Moment of delivery	Renovation Step 1 Immediately When Boiler needs to be exchanged	Renovation Step 2 2025 - 2030 Higher Comfort Demands	Renovation Step 3
Measures		Measures • Substitution of the heating system by a biomass boiler • Connection to an existing heating system	Measures • Internal wall insulation • Substitution of the old windows • Roof insulation • Improve the air permeability of the envelope	Measures • Insulation of the cellar ceiling • Installation of a heat recovery unit
Energy Use	Primary Energy Demand 252 kWh/m ² Main Energy Source Oil Final Energy Demand Main Source 199 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 11 kWh/m ² Energy Bill 9199 €/a	Primary Energy Demand 207 kWh/m ² Main Energy Source Wood Final Energy Demand Main Source 187 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 3 kWh/m ² Energy Bill 40600 €/a	Primary Energy Demand 76 kWh/m ² Main Energy Source Wood Final Energy Demand Main Source 62 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 3 kWh/m ² Energy Bill 14676 €/a	Primary Energy Demand 61 kWh/m ² Main Energy Source Wood Final Energy Demand Main Source 47 kWh/m ² Second Energy Source Electricity Final Energy Demand second Source 4 kWh/m ² Energy Bill 11695 €/a

CrossCert

WP4 Increasing the value of EPCs

T4.3 Linking next-generation of EPCs to energy audits, logbooks and BRPs

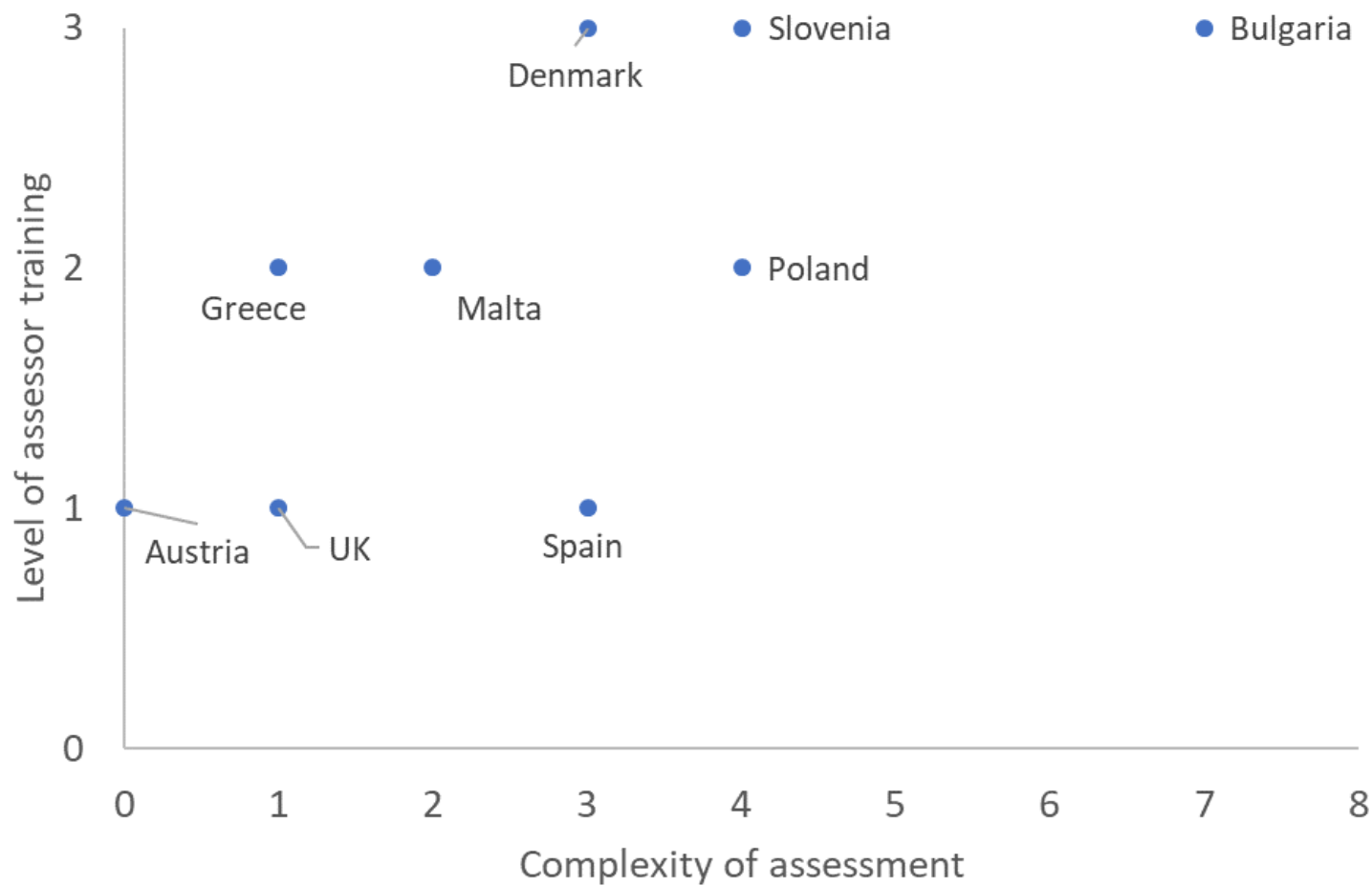
AEA

- How the new EPC approaches can **interact with energy audits, logbooks, or BRPs** to boost the energy building renovation
- Review of **building renovation roadmaps and logbooks**
- **Implementation** of energy audits
- **Evaluation, recommendations and guidelines** will be derived to integrate all these tools to promote building energy renovation

Numb.	Deliverable name	WP	Lead	Type	Dissem.	Delivery date
D4.3	Linking next-generation of EPCs to energy audits, logbooks and BRPs	4	AEA	R	PU	M31

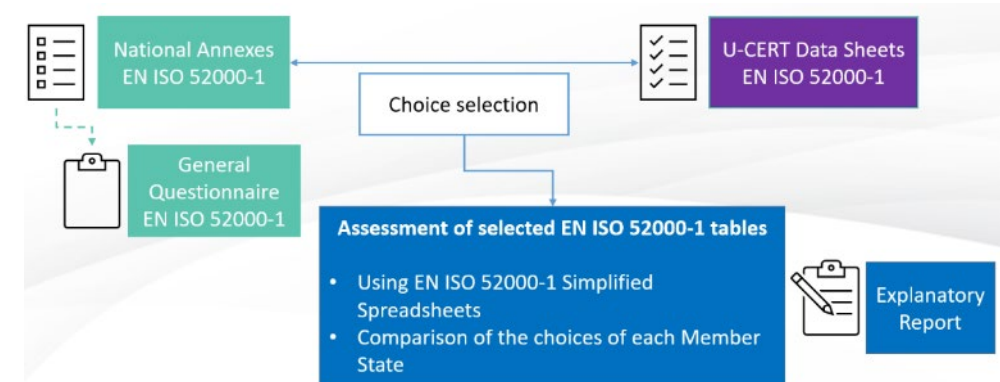
crossCert

CrossCert

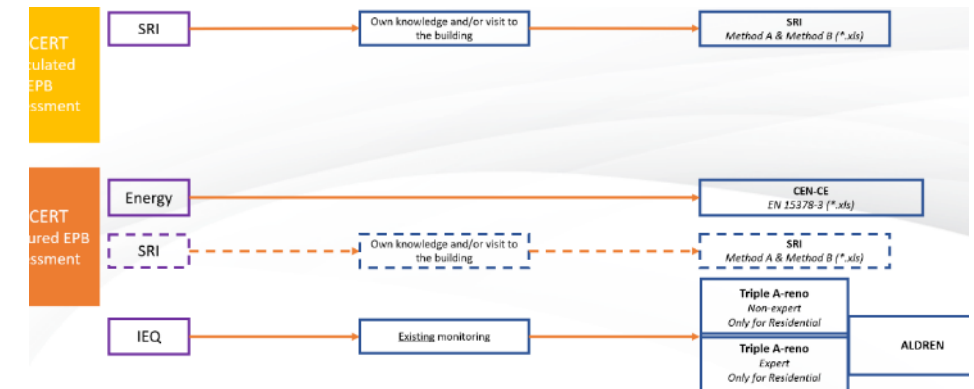


U-Cert

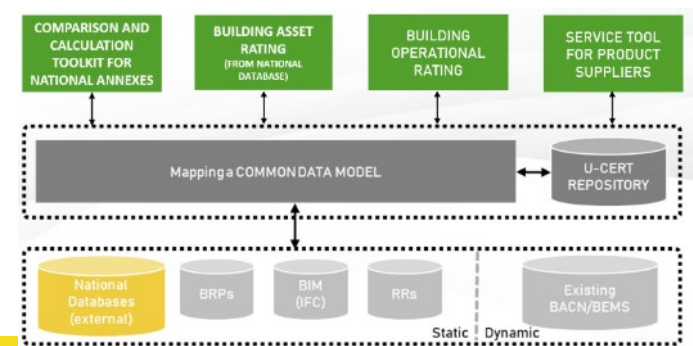
The U-CERT Comparison and calculation toolkit for National Annexes.



The U-CERT Building Operation Rating



The U-CERT Service tool for product suppliers, transforming product information into suitable input for energy calculations





Smart Readiness Indicator cluster



2022



SRI2MARKET



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Smart²

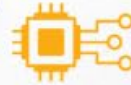
SMART² OBJECTIVES

1



Development of a set of tools & services that will boost the uptake of the SRI scheme among the member states of the EU

2



Roll out of ICT smart ready technologies including AI & IoT for smarter SRIs

3



Commissioning of a cloud based open platform for assessing the intelligence of buildings, tailored for building designers, facility managers and building users

4



Development of an SRI audit process, acting as the forerunner of a standardized procedure

5



Establishment of the required grounds for the integration of the SRI Ratings in building digital logbooks

SRI Assessment Tools

		I M P A C T S						SRI	
		Energy efficiency	Maintenance and fault protection	Comfort	Convenience	Health and well-being	Information to occupants		Energy flexibility & storage
DOMAINS	Total	39%	18%	60%	71%	48%	59%	0%	42%
	Heating	32%	18%	62%	55%	24%	74%	0%	
	Sanitary hot water	17%	0%	45%	70%	67%	83%	0%	
	Cooling	65%	51%	78%	72%	61%	55%	0%	
	Controlled ventilation	41%	0%	55%	60%	34%	44%	0%	
	Lighting	85%	14%	90%	100%	83%	15%	0%	
	Dynamic building envelope	10%	0%	31%	56%	22%	46%	0%	
	Electricity	10%	0%	-	-	-	68%	0%	
	Electric vehicle charging	-	38%	-	82%	-	84%	0%	
	Monitoring and control	52%	43%	62%	72%	45%	64%	0%	

SRI Assessment Tools

+ D²EPC Building Performance Module-SRI Calculation Subcomponent

+ EPC-RECAST BIM supported SRI assessment tools

+ Smart-Ready-Go®

+ Smart2B Smart performance assessment & Advisor (SPA&A)

+ SRI2MARKET platform

+ SRI Calculator in IsZEB Certify

+ U-CERT Smart Readiness Indicator (SRI) digital tool

Source: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/sri-implementation-tools_en

SRI Assessment Tools



BUILD UP Skills / Construction skills projects

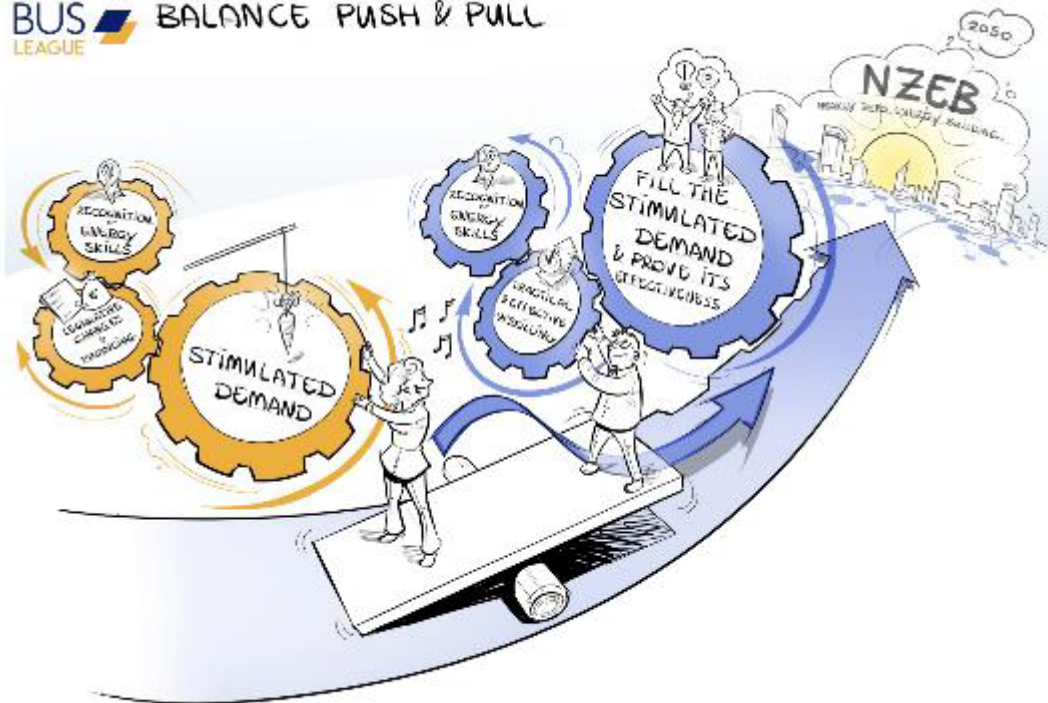


NZEB Ready

Target Category		Learning Program
White Collars	1. Designers (Architects and Engineers)	Thermal bridges calculation
	2. Energy Auditors and Assessors	Mechanical ventilation system with heat recovery
		Building air tightness evaluation
Execution Engineers	Solar shading systems	
	Bioclimatic design	
Public Authorities		Renewable energy sources
		Civil eng. Skills for nZEB Execution
Key specialists for nZEB Certification		MEP Skills for nZEB Execution
		nZEB Concept in practice
Blue Collars		Blower-door tester
		Thermal bridges evaluator - infrared evaluator
		General skills related to nZEB construction
		General skills related to nZEB MEP

BUS League

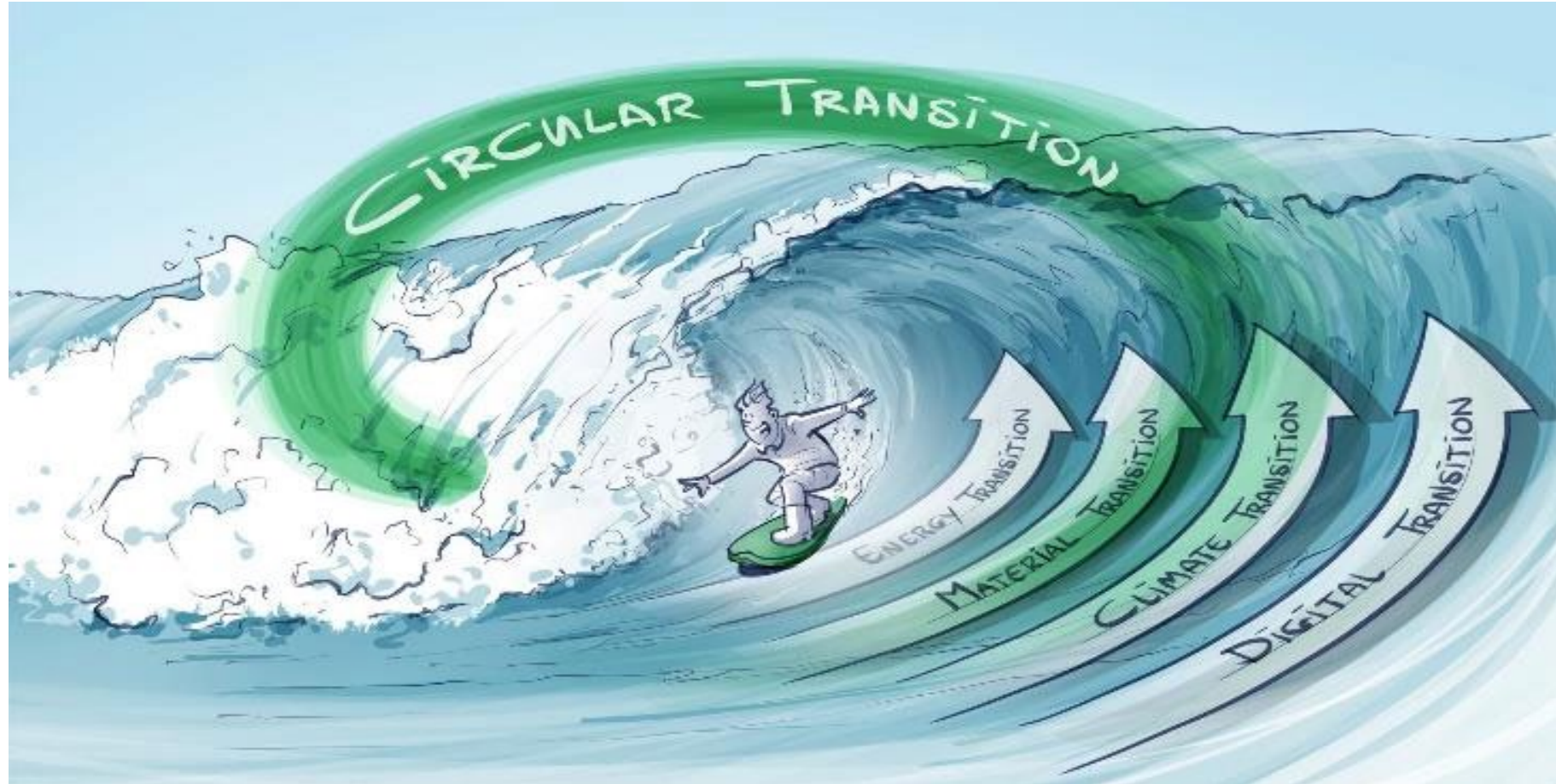
BUS LEAGUE BALANCE PUSH & PULL



BUS LEAGUE FILLING THE STIMULATING DEMAND



BUS GoCircular



BUS GoCircular

Circular skills in construction				
ULO Nr.	Competence	Skills	Knowledge	Notes & additional information
1	Design with bio-based materials as an alternative for conventional construction materials	Select bio-based materials for the construction project at hand Consider the purpose of the building and the context of the entire building solution, as well as construction requirements When biobased materials are not an option, select low impact materials Integrate use of the Material Circularity Indicator (make sure it is not higher than X) Ensure use of materials that have little to no volatile organic compound (VOC) emissions	Types of bio-based materials in construction such as hemp, seaweed, cork, bamboo, sustainably sourced wood, agricultural residues Advantages and disadvantages of biobased materials Seven functional requirements of building walls Alternative forms of concrete	https://ellenmacarthurfoundation.org/material-circularity-indicator
2	Enact measures that optimise material use to strive for material efficacy	Apply measures that optimise material use to construction projects Combat underutilisation or surplus of materials by sharing products or assets and optimising their use	General knowledge about measures that optimise material use in construction, such as 3D printing or accurate structural design/ industrialised prefabricated products	
3	Design with non-critical raw materials as defined by the EU	Avoid, insofar as possible, use of critical raw materials as defined by the EU while selecting materials for a project	Types of non-critical raw materials as defined by the EU	https://ec.europa.eu/growth/sectors/raw-materials/areas-specific-interest/critical-raw-materials_nl
4	Design with non-toxic materials as defined by the EU	Avoid, insofar as possible, use of chemicals as defined by EU while selecting materials for a project	Types of non-toxic construction materials, such as alternatives to anti-flame retardants used on wood	https://echa.europa.eu/-/chemicals-in-our-life-chemicals-of-concern-svhc
5	Design with products and materials that can be easily reused or recycled after use	Recognise and select materials that can be easily reused or recycled after the building's end-of-lifetime Recognise and avoid composites or other mixed materials that are then hard to recycle/repurpose	Reusable and/or recyclable materials, such as glass, plasterboard, steel, gravel (aggregates), rammed earth walls Recycling requirements for specific products and materials for safety and functionality (and regional/local infrastructure capacity)	
6	Replace freshwater use with alternative water sources	Use alternative water source applications that are suitable for the project at hand Harvest greywater and rainwater for certain applications Design sustainable drainage systems	Alternative water sources such as rainwater, fogwater, seawater, grey water etc. Which building applications are suitable for applying alternative water sources Sustainable drainage systems	

INSTRUCT

INSTRUCT
Evidence-based market and policy instruments implementation across EU to increase the demand for energy skills across construction sector value chain

8 Selected Pilot Demos in 6 EU countries

Policy recommendations
& market instruments towards energy skills recognition

€ 995 000
Jun 20 - Nov 22

New set of energy efficiency skills
across construction value chain

Logos: ASM, LIST, VTT, ril, R&M SOLUTION, habitech, EnEffect

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101019150

8 selected Pilot Demonstrators in 6 European countries

OBJECTIVES OF THE PROJECT

We aim to develop training courses and cooperation schemes for the construction industry in the field of energy-efficient buildings and to initiate legislative changes in this area.

The objectives of the project are:

- ▶ raising awareness about the benefits of sustainable energy skills;
- ▶ adaptation of current tools and provision of new educational solutions;
- ▶ systematising issues about the need of relevant qualifications of construction workers in private and public procurement.


West Cluster
- Luxembourg
- United Kingdom
- Finland
D2 West EU demo „BIM for Energy Efficiency Training and Standard“
Logos: LIST, R&M SOLUTION, habitech, EnEffect

North Cluster
- Finland
- EU UPI
D1 North EU demo „Energy skills certificate“
D3 North EU level demo „Energy gap reduction and initiatives for building owners“
Logos: ril, VTT, UIPI


North Cluster
- Poland
D4 Central EU demo „Energy skills recognition in policy making“
D5 Central EU demo „Partnership with producers, retailers and contractors“
Logos: ASM, research solutions strategy

South Cluster
- Italy
D6 South EU demo „Initiatives for building and home owners“
D7 Eastern EU demo „Engaging key stakeholders to create demand“
D8 Eastern EU demo „Developing capacity for supply of certifying qualified crew“
Logos: habitech, R&M SOLUTION, EnEffect

IBROAD2EPC: Available materials



Integrating Building Renovation Passports
into Energy Performance Certification schemes
for a decarbonised building stock



Training module for
construction professionals

<https://ibroad2epc.eu/portfolio-items/ibroad2epc-training-material-for-construction-professionals/>



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