ANGAN 2022
Making the Zero-Carbon Transition in Buildings

ASSESSING SMART BUILDINGS: THE SMART READINESS INDICATOR (SRI)

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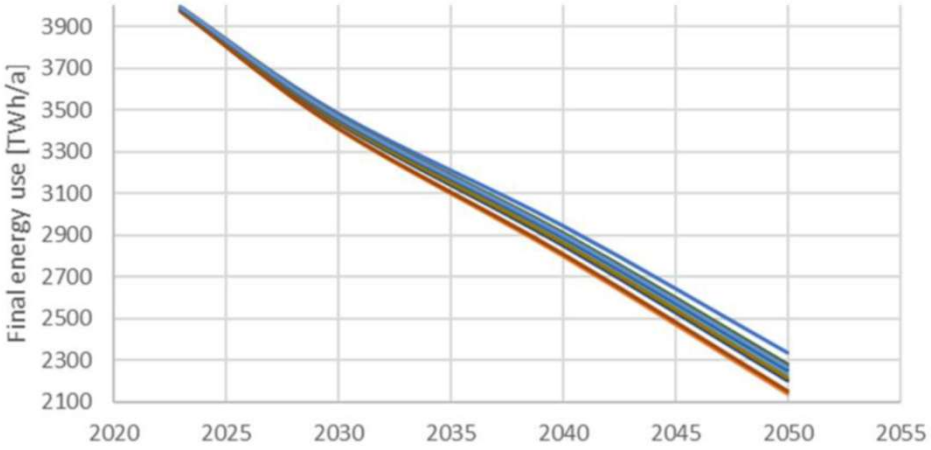
Digital ‘Smart’ solutions in buildings

Lead towards…

Very significant energy and green house gas emission savings of up to 25% (residential buildings) to 49% (offices in North Europe)

Source: EN ISO 52120-1 standard



EU28 impact of SRI for various implementation scenarios (SRI technical Report EC DG ENER)

Digital ‘Smart’ solutions in buildings

Lead towards…

Buildings which are more healthy, comfortable and convenient for their occupants

Digital ‘Smart’ solutions in buildings

Lead towards…

Energy flexibility by interacting with peers and the energy grid

Digital ‘Smart’ solutions in buildings

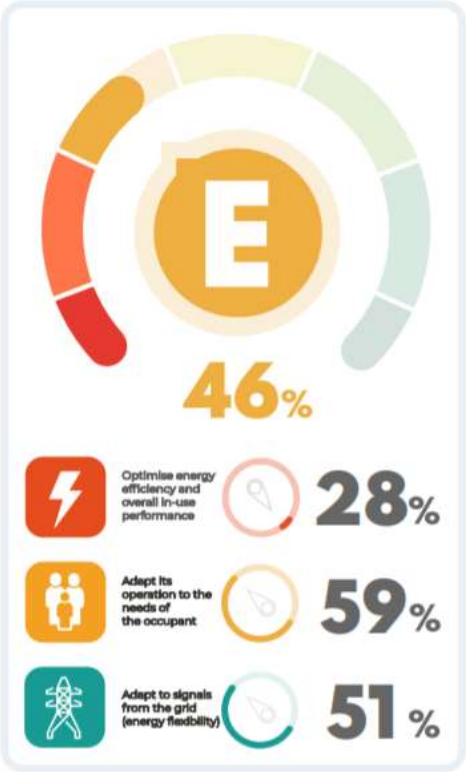
Lead towards…

Improved **planning** of energy performance upgrades and urban energy transition pathways

- *Is my building smart?*
- *What other investments can I plan?*
- *How can I compare various vendors?*

SRI

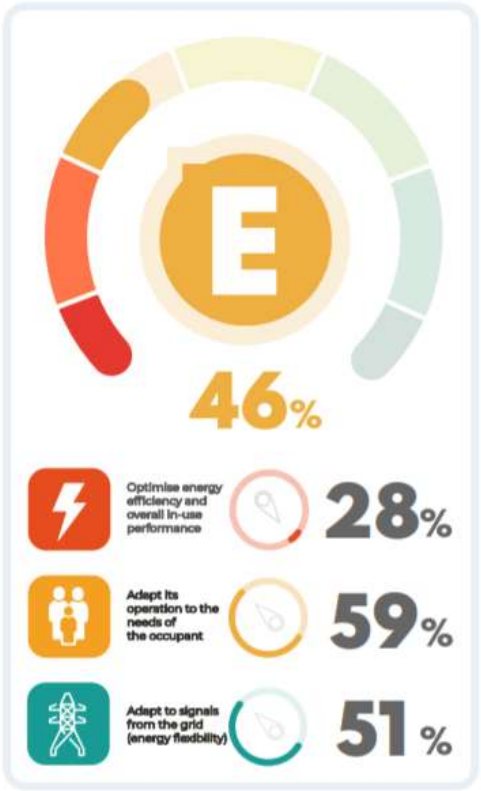
The Smart Readiness Indicator (SRI) is a common EU scheme for rating the smart readiness of buildings



→ SRI creates <u>awareness</u> on benefits of making buildings smarter

→ SRI provides a <u>common language</u> for building stakeholders
(owners, designers, solution providers, policy actors, etc.)

Three pillars of the SRI



Optimise energy efficiency and overall in-use performance
e.g. energy savings through advanced thermostat control, artificial lighting control, …

Adapt operation to the needs of the occupant
e.g. better thermal comfort, healthy indoor climate conditions, report on performance, …

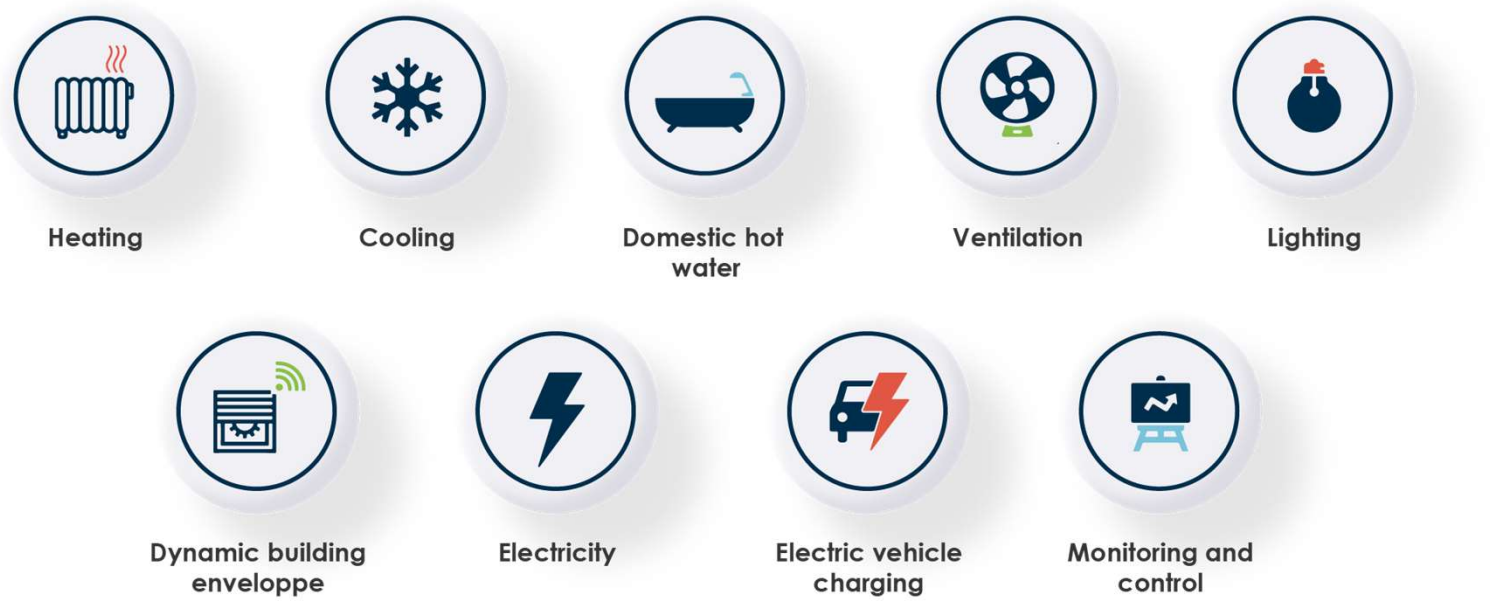
Adapt to signals from the grid (energy flexibility)
e.g. capability for Demand Side Magagement, 2-way Electrical Vehicle recharge points, …

SRI methodology

The SRI assesses buildings (or building units), based on their capacity to satisfy **seven impact criteria:**

SRI methodology

The methodology for calculating the SRI is based on the **assessment of smart-ready services** that the building has or could use ("service catalogue"). These services are grouped into **nine technical domains**:



Timeline of the SRI

2017
2018

First SRI technical study for the EC: definition of the SRI and draft methodology, intensive stakeholder consultation

2018

Introduction of the SRI in the **2018 revision of the EU Energy Performance of Buildings Directive**

2019
2020

Second SRI technical study for the EC: finetuning of the definition and associated calculation methodology

2020

EU Legal acts establish SRI as an official EU instrument

SRI is an optional common EU scheme

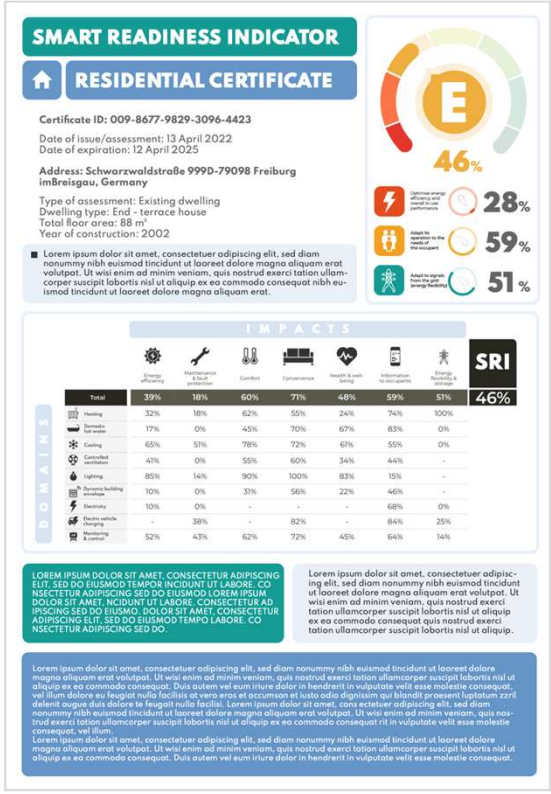
2021

SRI support team
providing technical assistance to EU Member States for testing and implementation of the SRI

European Commission

Current status of the in EU

- SRI is defined in legal acts, establishing it as an **official common EU instrument**
- EU Member States can implement on a voluntary basis, currently test phases ongoing



THANK YOU FOR YOUR ATTENTION

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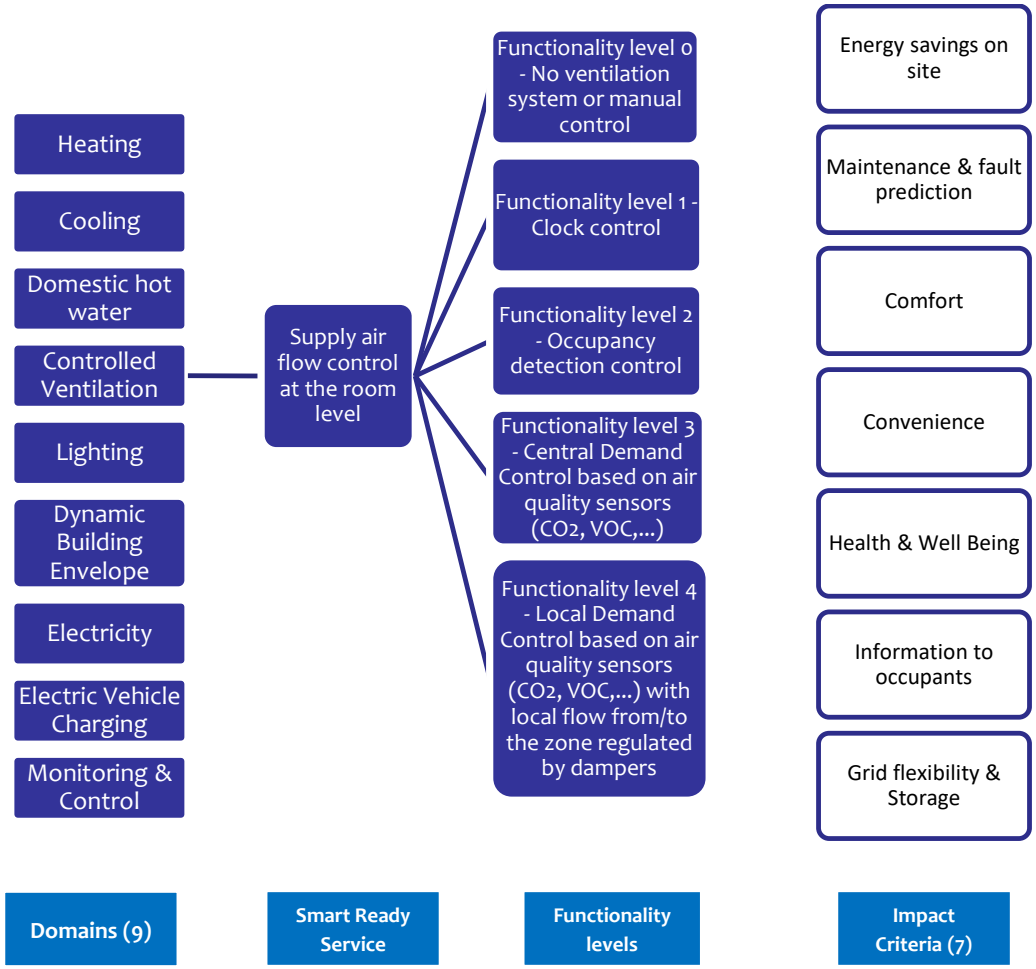
Additional information

- SRI website, FAQ and resources
  https://ec.europa.eu/smart-readiness-indicator
- www.vito.be
- www.energyville.be

SRI Catalogue

For each of the services, 2 to 5 functionality levels are defined. A higher functionality level reflects a "smarter" implementation of the service, which generally provides more beneficial impacts to buildings, its users or to the grid compared to services implemented at a lower functionality level.



Impact of smart services under 'Cooling' domain

Assessment done on "cooling emission control" smart service in Europe

Fn Lvl	Fn Lvl Name	Energy savings on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance & fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Central automatic control	+	0	+	+	+	0	0
2	Individual room control	+	0	+	++	++	0	0
3	Individual room control with communication between controllers and to BACS	++	0	++	+++	++	+	0
4	Individual room control with communication and occupancy detection	+++	0	++	+++	++	+	0

Each functionality level is given an ordinal ranking (---- to ++++) based on SRI impact criteria
"- - - -" indicates lowest impact
"+ + + +" indicates highest impact

Mapping of potential impact of all smart services against SRI impact criteria

Highest impact | *Moderate impact* | *Low impact* | *No impact*

S.No.	Smart Service Name	Energy savings on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance & fault prediction	Information to occupants
1	Cooling emission control							
2	Emission control for TABS (cooling mode)							
3	Control of distribution network chilled water temperature (supply or return)							
4	Control of distribution pumps in networks							
5	Interlock: avoiding simultaneous heating and cooling in the same room							
6	Control of Thermal Energy Storage (TES) operation							
7	Generator control for cooling							
8	Sequencing of different cooling generators							
9	Report information regarding cooling system performance							
10	Flexibility and grid interaction							

Technology providers' perspective

Highest impact	*Moderate impact*	*Low impact*	*No Impact*
Smart service	**Smart service name**	**Availability of the service**	**Impact on energy savings potential**
Cooling			
Smart service 1	Cooling emission control	✓	
Smart service 2	Emission control for TABS (cooling mode)		
Smart service 5	Interlock: avoiding simultaneous heating and cooling in the same room	✓	
Smart service 8	Sequencing of different cooling generators		
Controlled ventilation			
Smart service 1	Supply air flow control at the room level	✓	
Smart service 3	Heat recovery control: prevention of overheating	✓	
Smart service 4	Supply air temperature control at the air handling unit level	✓	
Smart service 5	Free cooling with mechanical ventilation system	✓	
Lighting			
Smart service 1	Occupancy control for indoor lighting	✓	
Smart service 2	Control artificial lighting power based on daylight levels		
Electricity			
Smart service 2	Storage of (locally generated) electricity	✓	
Smart service 3	Optimizing self-consumption of locally generated electricity		
Smart service 7	Reporting information regarding electricity consumption	✓	
Electric vehicle charging			
Smart service 2	EV charging grid balancing		
Monitoring & control			
Smart service 1	Run time management of HVAC systems	✓	
Smart service 5	Smart grid integration	✓	
Smart service 8	Single platform that allows automated control & coordination between TBS + optimization of energy flow based on occupancy, weather and grid signals	✓	

The survey results indicate that most of the smart services under each domain are either not well established or only have a low or medium functionality level, although for each smart service there is some presence of technology. Nevertheless, a market for smart technologies is available in India, although a push from both regulatory and financing bodies would make the availability wider and encourage further market adoption.

Developers perspective

- Demand of smart technologies in **commercial buildings** would be higher than for residential buildings.
- Smart technologies such as **automated blinds and occupancy sensors** are in great demand in standalone high-end residential buildings.
- There is a demand for **green buildings** in India and a SRI framework would act as a **catalyst** to achieve further energy efficiency in buildings.
- SRI rating for buildings will be beneficial as it will not only determine how **smart a building is**, but it will also determine **convenience**, which is often demanded by consumers.
- Rating a building's smartness via the SRI framework should not be a complex affair.
- The SRI catalogue should be modified to suit the Indian context to **ensure adoption** of the framework.

Consumers perspective

- Consumers are getting **adept at using smart technologies** to improve operational effectiveness. This in conjunction with **awareness** about energy savings potential via use of smart technologies will ensure uptake of SRI.
- **Commercial consumers** will be more inclined to adopt SRI framework as **multinational companies (MNCs) and Indian companies** have sustainability as one of the mandates to combat climate change.
- Residential consumers will be **skeptical to adopt SRI framework** due to possible higher upfront capital costs. Therefore, **incentives** should be provided to consumers by the Government to ensure better adoption of SRI framework.
- **Data security and privacy** is a major concern for consumers.

Way Forward

Update SRI catalogue & prepare a **methodology for rating a building for SRI**

A study on the **assessment** and **implementation** options

Pilot projects could be tested on a voluntary basis post confirmation of viability of the approach

Conduct **capacity buildings program** among manufacturers and consumers to adoption of SRI assessment scheme

THANK YOU FOR YOUR ATTENTION

Additional information

- SRI report of technical study

  https://ec.europa.eu/smart-readiness-indicator

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