

Smart Readiness Indicator

SMARTEN CONTRIBUTION TO VITO CONSORTIUM (2 May 2018)

INTRODUCTORY STATEMENT

The present document outlines the position and key recommendations of smartEn to feed the current discussions on the definition and provision of the Smart Readiness Indicator (SRI), in particular to provide inputs to the consortium led by VITO which drafted an interim report entitled “Support for setting up a Smart Readiness Indicator for buildings and related impact assessment”.

The application of the SRI at national level will be voluntary, but its deployment, following the common EU scheme that will be agreed by December 2019, should be made **as much attractive as possible for Member States**.

smartEn appreciates the efforts that are being made to deliver a practical measure across all building types which must be relatively easy to implement. However, we believe SRI methodologies shall be reflective of various use-cases, shall be easier to implement for Member States and shall bring benefits to the whole building value chain. The objective of this indicator is to **drive the digital transition of the EU building stock** through an ambitious implementation of the EPBD review.

Recognising the valuable work that has so far been completed, smartEn offers the following recommendations as a way to further **simplify and streamline** the proposed SRI and to explore further options that could pave the way for the progressive introduction of **physical measurements of actual building performance in demand side flexibility**.

As the SRI approach might be a burden for **smaller buildings (e.g. below 300 m²)** that have traditionally no data driven potential and less construction modelling prior to construction, a subset of the services that are applicable to those buildings shall be defined.

SUMMARY OF THE 7 SMARTEN RECOMMENDATIONS

smartEn identified the following key recommendations for a correct definition of a Smart Readiness Indicator:

- 1. Define an SRI which does not just comply with the mere implementation of EPBD review, but is consistent and coherent with the new Electricity Market Design and market expectations;*
- 2. Set a weighting mechanism, specific for each building type, to give more relevance to the impact criteria that can attribute a significant value to a building's demand side flexibility;*
- 3. Provide salient information to quantify the value of a building in demand side management and demand side flexibility;*
- 4. Modify the calculation methodology from inspection-based to data-driven (when data is available);*
- 5. Do not rely just on consolidated standards as the contribution of new innovative solutions cannot be taken into account;*
- 6. Set a periodic timeline for SRI update and revision to reflect technological progress and maturity of services/business models;*
- 7. Define an SRI which is complementary - not antithetic - to EPCs or BRPs.*

Description of smartEn 7 recommendations on how to improve the Smart Readiness Indicator:

1. ALIGNMENT WITH THE ELECTRICITY MARKET DESIGN AND MARKET EXPECTATIONS

The SRI development must be contextualised in the EU's broad energy policy agenda to increase variable and decentralised energy production, new technological opportunities for consumers that can actively participate in electricity markets through demand response, self-consumption and storage, and the move towards low carbon transport via adoption of e-mobility solutions.

In a higher-level sense, these objectives equate to support the **decarbonisation of the energy system**, increase system efficiency and provide value for money to end-users and bill payers.

Under a market perspective, these objectives shall try to address market expectations regarding building value (in term of sustainability, efficiency and flexibility) and shall be pursued in light of existing labels.

In this sense, buildings shall be appreciated as real energy infrastructures that interact with the electricity system and can drive the transition towards a low-carbon economy and a circular economy.

***RECOMMENDATION:** Define an SRI which does not just comply with the mere implementation of EPBD review, but is consistent and coherent with the new Electricity Market Design and market expectations.*

2. CONSISTENCY WITH THE AGREED EPBD REVIEW: FOCUS ON DEMAND SIDE FLEXIBILITY

The legal basis for the establishment of a Smart Readiness Indicator (SRI) is provided by the revision of the Energy Performance of Buildings Directive (EPBD), in particular article 8.6 and Annex Ia.

The EPBD review foresees that the SRI rating shall be based on an assessment of the capabilities of a building or building unit to adapt its operation to the needs of the occupant and the grid and to improve its energy efficiency and overall performance.

Annex Ia further specifies that the SRI methodology shall rely on three functionalities, among which the ability of a building to adapt its operation mode in response to the needs of the occupant and the flexibility of a building's overall electricity demand, including its ability to enable participation in active and passive as well as implicit and explicit demand-response, in relation to the grid, for example through flexibility and load shifting capacities.

It is of paramount importance that VITO consortium keeps consistent with these provisions set by EU legislators and gives a proper, specific recognition within the SRI to the **demand side flexibility** potential in buildings.

Buildings have indeed flexibility potentials that represent precious decentralised energy resources for the energy sector. These resources can be used to maximise energy use when it is most cost-effective, while reducing consumption at moments when the electricity system is under pressure. Short-term reductions in energy demand in response to market-price signals can be compensated by using (available) on-site generation and storage assets.

In this sense, the SRI should assess the building's ability to actively communicate and cooperate with the occupant who can decide to adjust consumption to variable market-price signals. This SRI would look at how much of the building's load can be shifted or curtailed at any one time, and how much on-site production of electricity can be self-consumed and/or delivered to the grid.

Demand Side Management (DSM) programs which encourage the end user to be more energy efficient through an automation update can become an enabler for demand-side flexibility: only the presence of digital solutions in buildings can unlock the complementary potential of DSM and demand-side flexibility.

Following this logic, the eight impact categories/criteria defined by VITO consortium to identify the different perspectives upon which the SRI should be based on (Energy savings on site, Flexibility for grid and storage, Self-generation, Comfort, Convenience, Health, Maintenance and fault prediction, Information to occupants) are not of equal importance, especially in some buildings.

For example, comfort, convenience and health should of course always be guaranteed, especially for residential buildings, but we must not risk a confusing indicator where, for example, mood lighting or control over window blinds are given equal weighting to flexible appliances: certain services that have as a main purpose delivery energy savings and providing flexibility will inherently bring positive consequences for comfort, convenience and health.

***RECOMMENDATION:** Set a weighting mechanism, specific for each building type, to give more relevance to the impact criteria that can attribute a significant value to a building's demand side flexibility.*

3. SIMPLE INDICATOR OF DEMAND SIDE FLEXIBILITY

The SRI shall be addressed to building owners, occupiers, property valuers, financial institutions, facility managers and smart service providers.

The indicator of a building's flexibility should allow any prospective owner or occupant to immediately know how easy it would be for them to support energy and system efficiency while a) saving money on their electricity bills thanks to energy savings and buildings maintenance and where applicable also the reaction to dynamic price signals and b) potentially earning money through selling their flexibility on the energy markets.

It should also allow various actors in the energy system, such as aggregators (of both self-generated electricity and demand response), to know how much flexibility a building can offer, in order to include it in their portfolios.

In this perspective, VITO consortium shall test the SRI with prospective users before its launch and investigate if its value is understood by building owners, occupiers, property valuers, financial institutions, facility managers and smart service providers.

RECOMMENDATION: Provide salient information to quantify the value of a building in demand side management and demand side flexibility and test the SRI with prospective users (and report back to the European Commission before it is launched across Europe).

4. DATA-DRIVEN MEASUREMENT SYSTEM

The SRI methodology proposed by VITO consortium of a multi-criteria assessment based on the predicted impacts of the smart services present in a building is too complex if done by a third-party assessor who inspects the building and its system on site to conduct the SRI assessment and compute its score.

Energy data can be used (and trusted) for setting the SRI: **digitisation** is providing considerable amounts of energy data that can be used to **measure the actual rather than theoretical smartness of a building**¹.

Real data will soon be available from each building and can therefore create much more useful individual information than a theoretical value derived from bureaucracy².

RECOMMENDATION: Modify the calculation methodology from inspection-based to data-driven (when data is available).

5. SUPPORT INNOVATION

Moving from on-site inspections to automation for the calculation of the SRI will support the uptake of innovative solutions which contribute to demand side flexibility.

We regret that VITO consortium limits the contribution of the most innovative solutions just because they are not supported by consolidated standards which can be used by on-site inspectors for an objective and relatively short assessment.

Specifically, the domains Energy Generation, Demand Side Management, Electric Vehicles are significantly streamlined by the consortium as most of their sub-services are currently poorly defined and not supported by consolidated standards.

On-site energy storage is not even represented and reflected in the catalogue proposed, although many technologies could function as a battery or have a storage element included in them, as for electric vehicles or elevators (which consume energy, but can also store it in batteries for internal energy management, re-use braking energy and put it back to the building's energy system).

This approach hinders the uptake of **innovative solutions**.

Although standards can help the uptake of smart solutions and their use should be fostered in all building types, the SRI should be developed to assess the essential enabling features that are actionable already today.

For example, it has been already demonstrated that it is possible to quantify the costs and benefits for demand side flexibility and energy savings of smart appliances: there are several standards and use cases available that identify the functionalities in a harmonised way³.

¹ However, one challenge that needs to be considered is that the quality of BACs commissioning might negatively influence the outcome of the SRI assessment process. Buildings are often poorly commissioned resulting in a large percentage of technical equipment not functioning as designed. Performance can also degrade with time due to faults, malfunctions of not properly maintained. Hence, it is of paramount importance that BACs are properly installed, otherwise their full contribution to the smartness of a building will not be realised, affecting the SRI ranking.

² However, as at the moment it is difficult to have full data-driven assessment for large commercial buildings, on-site inspections should be allowed to complement missing information that cannot be provided yet by digital devices.

³ Any proposal on a Smartness Indicator should duly consider the work on Smart Appliances already taken forward under the Ecodesign Directive and the revised energy efficiency label (including the definition of what is a real energy smart appliance), as well as the interoperability solutions currently under development for these appliances. For example, IEC 62746-2 (use case and requirements for Smart Grids and Smart Home) and in EN50631-1 (Smart Appliances – General Requirements and data models).

There are cross overs between the SRI and other ongoing initiatives, as Lot 33 on Smart Appliances and the BACs preparatory study, which see the direct involvement of VITO and could provide expertise in this sense.

RECOMMENDATION: Do not rely just on consolidated standards as the contribution of new innovative solutions cannot be taken into account.

6. REGULAR REVISION

A regular revision of the SRI should be foreseen approx. every 18 to 36 months to reflect progress:

- in **innovative offerings** that raise the maximum functionality level attainable within any given sub-service. A regular restructuring and rationalisation which foresee the integration of new sub-services will give the possibility to the SRI to play a key role to give visibility to innovative products, even before they are ready for mass market consumption;
- for the **emergence of common standards**. For example, standards for interoperability between storage/batteries or other building technical systems (e.g. HVAC, elevators, BMS, BEMS etc.) and the grid (including behind the meter) needs to be more clearly defined. The interfaces for bi-directional communication need to be also defined, but efforts to examine these standards are underway and evolutions should be accounted in updated versions of the SRI.

RECOMMENDATION: Set a periodic timeline for SRI update and revision to reflect technological progress and maturity of services/business models.

7. COMPLEMENTARITY WITH EPCs AND FULL INTEGRATION WITH BRPs

As Energy Performance Certificates (EPCs) are increasingly embedded in the EU 27 legislations, the SRI should **complement EPCs, by being among others an active measure of flexibility**.

The possible, welcomed evolution of EPCs to **Building Renovation Passports (BRPs)** shall not be perceived as a risk for the SRI: the SRI should be fully integrated into BRPs which should guide and unlock the flexibility of Europe's building stock, and support the wider energy system to integrate larger shares of renewables in a cost-efficient way.

A building's smartness rests on its ability to connect and interact with the outside energy ecosystem, delivering financial benefits to its occupants, and physical delivery of energy or shifting/curtailing of demand to the electricity system. Such better match between supply and demand would limit the volumes of renewable electricity curtailed, and reduce the dependence on inefficient and carbon-intensive back-up generation. The SRI, integrated into the BRP, should help driving and financing this evolution.

RECOMMENDATION: Define an SRI which is complementary - not antithetic - to EPCs or BRPs.

About smartEn - Smart Energy Europe

smartEn is the association of market players driving digital and decentralised energy solutions.

A successful European energy transition requires the intelligent cooperation between consumption, distribution, transmission and generation, acting as equal partners in an integrated energy system.

Our vision:

The digitally enabled interaction of demand and supply is an integral part of an increasingly decentralised, decarbonised energy system.

Our mission:

- **Promote system efficiency** through the advanced management and integration of electricity demand and supply in homes and buildings, transportation, businesses and decentralised energy projects.
- **Empower energy users** by enabling them to participate in the energy market through flexible demand, storage, self-generation and the participation in community projects, and giving them control of their energy data.
- **Encourage innovation and diversity** by enabling new market players and service offers that provide attractive choices for consumers and allow for healthy competition.
- **Drive the decarbonisation of the energy sector** through the cost-effective integration of renewable sources and the electrification of heating, cooling and transport.

Industrial membership

