

Smart Readiness Indicator of Buildings
Second Stakeholder Meeting, 21 December 2017
Albert Borschette Congress Center, Rue Froissart 36, Brussels

(The meeting was non-public and upon invitation only, and this meeting was recorded)

Sarah Bogaert – *VITO/EnergyVille* welcomed the participants to the stakeholders meeting. She explained that, during the meeting, insights would be provided on how stakeholders' feedback has been taken into account so far in fine-tuning the Smart Ready Service catalogue and that it would be clarified how the catalogue was streamlined and shaped into a first draft of the Smart Readiness Indicator (SRI) calculation methodology developed in the framework of this study.

Opening of the meeting by Paul Hodson – Head of Unit C3 - Energy Efficiency, DG ENERGY, European Commission

Paul Hodson updated the audience on the recent political negotiations on the revision of the EPBD and in particular on the legal framework for the SRI. On 19 December 2017, the final trialogue on the revision of the EPBD took place and led to a provisional agreement that still needs to be formally approved. According to this provisional agreement, the SRI will be optional and based on two legal instruments: delegated acts for its definition and its calculation methodology and, implementing acts for the technical modalities of its implementation. Paul Hodson emphasized that this approach was most relevant, as it gives control to the Member States (through the EPBD Committee) on the implementation of the indicator. In addition, Mr. Hodson explained that the provisionally agreed legal text included a technical Annex (Annex Ia) that will give a framework for the definition and calculation methodology of the indicator.

Smart Ready Services Catalogue revisited: what was changed as a result of your feedback?

Sarah Bogaert & Stijn Verbeke – VITO/EnergyVille

Sarah Bogaert reviewed the objectives of the study, indicating that the interim report had been shared with the participants and would be uploaded on the website after the meeting. She emphasized that the technical study would continue feeding the process of the EPBD revision and that it should be clear that the technical study is an independent process from the policy making one: the results of the study feed the policy making process (in view of the adoption of the legal acts) but do not lead to the definite shape of the indicator.

Ms. Bogaert reminded that the objectives of the study were to:

- quantify the impacts of and assess smart technologies in buildings,
- define a harmonized methodology to calculate and express the SRI,
- provide an Impact Assessment (IA) comparing policy options, which would then feed the Commission's own Impact Assessments.

Ms. Bogaert also emphasized that the study followed an iterative process and that there would be the possibility to revisit earlier tasks in the subsequent steps. She also highlighted that stakeholder consultation had been and would remain very important and, referred to related

initiatives that gave opportunities for consultation, e.g. a workshop at the Concerted Action EPBD in Bucharest, Romania (October 2017).

Stijn Verbeke VITO/EnergyVille outlined the progress in Task 1, which aims at clarifying the concept of building smartness and to identify the smart ready services that could be considered in the methodology for calculating the indicator. He emphasized the three key aspects considered:

- Readiness of the building to adapt to the needs of the occupant and provide information to the occupants;
- Readiness to facilitate maintenance and reparation of technical building systems;
- Readiness to adapt in response to signals from energy grids, e.g. load shifting to adapt to the variations of renewable energy production.

Stijn explained that task 1 resulted in the identification of 108 different smart ready services grouped into 12 domains. He emphasized that the services had been defined in order to be technology neutral, modular and flexible. He clarified that the project team was open to add new services, where appropriate. He also detailed how services could include functionalities, which were mapped to functionality levels with different impacts (grouped in eight impact categories). He emphasized that some of the services and impact criteria had already been adapted based on stakeholder feedback and explained that the feasibility to identify and assess smart services on-site (as part of a visit and through visual inspection) and the time required for doing so had been taken into account when populating the smart ready catalogue.

Key factors and principles to consider when deriving a Smart Readiness Indicator

Paul Waide – WSE

Paul Waide presented the key factors to consider when deriving the SRI and the requirements that helped framing the methodology.

Paul explained that, on a technical level, the methodology should be able to use the inputs from task 1 (taxonomy for the services and subservices and their mapping to impacts) in order to assess how smart (ready) a building is and, within this process, to allow the impacts of different capabilities to be scored. Paul also emphasized that the methodology needed to be adaptable to context and should avoid unintended undesirable side-effects.

One important point made by Paul (in line with Mr. Hodson's opening talk) was that the term "smart ready" would imply that the building itself could have smart features, but its potential to realise these benefits from smart services could be constrained by limiting factors: this is the difference between "smart ready" and "smart now".

Discussion:

Clarification on energy flexibility considerations

Following a question on energy flexibility, it was clarified that the role of aggregators and the issue of the regulation of electricity prices in future electricity systems was discussed as part of the negotiations on the Clean Energy for All Europeans Package. It was also emphasized that, in order to leverage the full potential of energy flexibility it would be better to have a fully operated market for electricity prices.

Clarification on the distinction between smart readiness, smart building and smart now

There was a discussion about the distinction between “smart readiness of the technical system” and the smartness of the physical building itself. It was clarified that the building could not be smart if the grid system did not allow it to exploit its smartness potential, and therefore, given the focus on buildings, that it would be preferable to refer to "smart readiness" in the scope of the indicator.

It was emphasized that the SRI should be an incentive to make buildings smarter. The risk to mislead consumers by focusing on smart readiness as opposed to smartness was raised. On that point, it was mentioned that if people only focused on smartness as it is ("smart now") and not as it could be ("smart ready"), opportunities to further upgrade the smartness in later steps could be missed. It was reminded that the focus of the study was on smart readiness.

One comment suggested that it could be misleading to focus on building smartness instead of technology smartness and that it might be better to focus on the equipment rather than on the building.

Clarification on the possible use of the SRI at (building) design phase

On this point, it was made clear that it could be possible to rely on the SRI at the design phase. As the methodology for calculating the SRI should be transparent, it could be used to predict the SRI of a building at the design stage.

Clarifications on the scope of the SRI

It was clarified that the scope was the one defined in the text of the amended EPBD Directive and that, to this end, the provisional agreement on the revision of the Directive included a technical annex.

About appliances, it was explained that household appliances was not a domain in the smart ready catalogue but that the services which controlled these appliances were however considered.

Following a question on the consideration of the ability of a building to manage peak loads, it was answered that this was partly covered by the “flexibility” impact category in the smart ready catalogue. With respect to self-generation, stakeholders were invited to review the smart ready catalogue and it was reminded that the project team was open for suggestions to expand that catalogue.

It was clarified that all smartly controlled technologies were in the scope of the SRI. Therefore, the consideration of natural ventilation if it was smartly controlled could be relevant.

A stakeholder pointed out that in his view, the presentation was heavily focused on energy, while health and comfort were less visible during the presentation. It was explained that the scope of the indicator (i.e. which elements it shall address) was set by the legal text.

Clarifications on interactions with other initiatives

It was suggested to open a work stream looking at the interactions between SRI, building renovation passports, building materials and products. Otherwise there could be a risk to lose the attention of the Member States. It seemed to be a major concern from some stakeholders’ perspective.

A stakeholder drew the attention of the consortium on a label for smart buildings developed in France, which particularly focuses on the "ready-to-services" layer of buildings. While it was acknowledged that it was important that such initiatives are launched in the Member States to better characterize connectivity and interoperability capabilities of buildings, the consortium emphasized possible difficulties in assessing these capabilities in a simple and cost-effective way. The Commission noted that there were ongoing internal discussions and exchanges with DG CONNECT on these questions.

Some stakeholders indicated that in the Netherlands, there was a progression towards circular buildings since 2015 and noted that more insulation could be in conflict with low life-cycle consumption and circularity. They asked whether the SRI could contradict to circular economy and sustainability purposes. The consortium noted that thoughts on how to take circular economy into account were welcome, but that it was not in the focus of this meeting. The Commission also mentioned that such issues were investigated in other scopes, e.g. Ecodesign policy instruments.

The team also mentioned they were aware of the existence of a specific framework for building sustainability, LEVEL(S) and that possible connections between the two schemes were discussed. In addition, the team expressed openness on considering any possible constructive connection with existing initiatives and indoor air quality can be particularly relevant.

Clarification on the preconditions applying to the SRI

Following a suggestion by a stakeholder, the consortium clarified that preconditions on some characteristics of systems could possibly be considered in the SRI calculation. But it was also noted that the question could be whether there should be preconditions or if such characteristics could be taken into account in the scoring system.

It was also clarified that the consortium would welcome any suggestion on if and how passive technologies could be taken into account, possibly through connections with other labelling schemes.

Clarifications on the interactions between the different impact criteria

It was pointed out that some impact criteria could be sometimes in conflict with each other, e.g. enhanced comfort could lead to higher energy consumption, with the risk that scores can have compensating effects and lead to undesirable results. For health, comfort and indoor air quality, one suggestion was to rely on a required minimum (boundary condition) or a combination of both scoring and boundary condition.

Clarifications on the policy making process and implementation

The SRI should be (under the provisional agreement reached in December 2017) optional and based on two legal instruments: delegated acts for the definition and the calculation methodology and, implementing acts for the technical modalities of implementation. The definition and calculation methodology should in addition comply with the framework given by a technical annex (Annex Ia). The legal acts for the establishment and implementation of the SRI should be developed and adopted in the coming months (the provisional agreement gives end of 2019 as a deadline). It should

be noted that this technical study remains agnostic with respect to considerations related to the implementation modalities of the indicator. The consortium explained that the approach was to develop a methodology flexible enough to enable an adaptive roll out in the Member States.

Smart Readiness Indicator: harmonized calculation methodology

Paul Waide – WSE

Paul emphasized that the objective was to derive a viable harmonized SRI calculation methodology based on a multicriteria assessment potentially including weighting. He explained that the ordinal functionality impact scores could be mapped to a numerical score and that percentages could also be used. He underlined that value judgements could not be avoided and should be discussed. He emphasized that the advantage of the structure is that it was modular, could be adapted according to inputs from stakeholders and was always normalized.

Paul noted that there were 108 services and 86 different subservices coming from the Task 1 catalogue. Exemplary calculations for a Single Family House (SFH) case study with equal weightings clearly showed the need to prioritize subservices as a lot of subservices were not relevant for the calculation.

Paul emphasized that the methodology would work in principle, would be flexible and modular, fair, future proof and adaptable to context. Impacts could be weighted as users see fit, operated with qualifying conditions and would be flexible in how the information it contains is reported. He also mentioned that within the aggregated score there were quite some subscores, which could possibly be reported separately.

Towards a Smart Readiness Indicator: Triage processes for streamlining the Smart Ready Service catalogue

Paul Waide – WSE & Stijn Verbeke – VITO/EnergyVille

This presentation emphasized that some of the subservices could be difficult to assess through on-site visual inspections, e.g. demand side management capabilities. Such assessment could be facilitated where there is labelling in place that allows such inspection. Another example given was electric vehicle recharging points, which smart capabilities could also be difficult to assess on-site, given that such capabilities relied mainly on software. The need to ensure the feasibility of on-site assessment led the consortium to consider the triage and streamlining of smart ready services. That streamlining consisted in the omission or restructuring of sub-services and led to reduce the number of sub-services to fifty (noting that the most significant changes were made for Demand Side Management and electric vehicles).

Following that streamlining, an estimation of inspection times was done. It concluded that a single-family home could be assessed through a 20 minutes-inspection. Another case study, consisting of a (larger) smart office building led to an inspection time of 2.5 hours to 4.3 hours depending on the documentation available. It was noted that streamlining with triage was probably necessary to make the SRI viable but that it could be further discussed in this interactive and iterative work.

Discussion:**Clarifications on possible loopholes when the smart system becomes obsolete**

Following a comment, the team acknowledged the need to update the smart ready catalogue based on the evolution of technologies. If a service becomes obsolete, there should be a process to keep on top of that.

Clarifications on the consideration of system configuration in the definition of services

The consortium clarified that the definition of services as it stands does not take into account systems' settings and configuration. So a service could score well even if its settings are not fully adequate.

Following a comment, the team reminded that an interlock capability was considered in the services list for the combined management of heating and cooling.

Clarifications on SRI for residential and for office buildings

It was indicated that there is a large difference between managing residential and non-residential (office) buildings and that such differences should be accounted for in the SRI. The team reiterated that they were open for suggestions to ensure a better consideration of that aspect.

Clarifications on the usage of standards and their impact on innovation

A comment made by a stakeholder emphasized that European standards such as EN15232 are based on average impacts of technologies on energy performance, which might not be sufficient to cover all types and ages of buildings. The suggestion was to consider coupling the SRI calculation with EPC data, with the argument that considering the EPC as a starting point for impact scores would lead to implicitly include weighing factors for that particular building.

In relation to innovation, a comment pointed out that there could be a risk to hamper innovation if the SRI relied on standards as these tend to fall behind in innovation. It was also commented that the assessment of smart readiness should more rely on real-time information provided by products and systems instead of their visual inspections. The consortium acknowledged this forward-looking thinking and suggested that, while the draft methodology implicitly assumed an on-site visual inspection, there could be more work done towards more automation in this process in the future.

Clarifications on the development of the methodology

Stakeholders seemed to acknowledge the need for a streamlining process. Asked whether it would be possible to have two methods: a simple one with the core enablers and a more complex one. The consortium clarified that since SRI should be voluntary the simpler its form, the easier its adoption should be.

It was pointed out that the methodology could have gaps, like how the translation of SRI rating could translate into energy savings or decarbonisation. A suggestion was made to target more quantitative results (rather than qualitative) to give more credibility to the SRI.

Clarifications on the inspection

The team asked the stakeholders' opinion (in their written comments) on who should do the inspection (e.g. an energy auditor), noting that this issue was related to the implementation of the SRI, which modalities should be defined in the SRI implementing act. On that point, it was stressed that it would be particularly useful to have the feedback from National administrations.

Clarifications on the methodology approach

It was mentioned that the methodology should follow a bottom-up approach, focusing first on component / system level before considering building level – doing so, it could better highlight those areas where lies the most potential for performance improvement. The team acknowledged the point and stressed that the indicator was intended to reflect as accurately as possible the smartness of the buildings as well as the areas where there was significant margin to improve.

A stakeholder suggested to consider a single metric for different impacts, e.g. non-renewable primary energy (PE) at national level, instead of the current proposal on MCDM (multi-criteria-dimension-analysis). The team clarified that this point had already been discussed and that the conclusion was that some impacts could not be captured by PE and reminded that, in any case, it remained open to suggestions.

Clarifications on bridging the gap between calculated and real energy consumption

There was a suggestion to consider energy consumption by fuel and by end uses as part of the SRI in order to ensure that, where energy savings are indicated, the related baseline is also clear. The consortium clarified that it was not the intention to include such a detailed consideration of energy consumption in the SRI, noting that Annex Ia gives the framework for the definition and calculation of the indicator including the strict requirement not to hamper the EPC or other schemes. The team also mentioned it would welcome written comments on this issue.

Clarifications on the rebound effect

It was pointed out that sometimes the consumption of new equipment could be very high and could jeopardize savings (e.g. detection sensors that could consume as much energy as the LED bulbs would). A very smart building, with a good score, could also have a high energy consumption. The team acknowledged that it could be true in some cases but should remain exceptional. The team suggested to provide quantitative evidence to whether such issues should be considered – and how – in the calculation of the SRI.

Next steps of the study

Sarah Bogaert – VITO/EnergyVille, Paul Waide – WSE & Kjell Bettgenhäuser - Ecofys

Sarah informed the audience that an invitation for written comments would be sent out together with a template, in order for stakeholders to send their comments by mid-February. Sarah also mentioned that the next stakeholder meeting was provisionally foreseen in May, and that it was planned to present the next version of the report and of a large part of the impact assessment during that meeting.

For Task 2, Paul reminded that the team was looking forward to receiving and processing feedback on impact and weighing. Paul also explained that further efforts would be put on the estimation of time and cost of inspection and on the shape of the SRI in the subsequent steps of the study.

Kjell explained that Task 4 (impact assessment) would refine all assumptions and perform a cost-benefit analysis for the European building stock with snapshots at 2020, 2030, 2050 for residential and non-residential buildings, relying on a consistent set of scenarios.

Closure of the meeting by Paula Rey Garcia, Leader of the Buildings & Finance Team, Unit C3 - Energy Efficiency, DG ENERGY, European Commission

Mrs. Rey Garcia wished to emphasize three things:

1. This work is of key importance for the next policy cycle

The SRI is a key component of the revision of the EPBD. This revision gives a fundamental push to a better renovation rate and to modernizing the building stock. These were the two key objectives of the revision of the EPBD. The SRI is having a central role in the latter and can give value to smart technologies, potentially changing a lot for the building sector.

Part of the Clean Energy Package puts the consumer at the centre. It also creates better links within different parts of the energy system, focusing on interactions with the citizen, and improving synergies with smart grids and with mobility. Smart buildings make this link, driving consumption in a much more active way.

2. Complementarity with other initiatives

There are high expectations from this work but the indicator will not solve everything, this is not the only answer to all questions. There exist also the national renovation strategies, the standards on the EPBD calculation methodologies, and other initiatives such as LEVEL(s). The indicator needs to be as complementary as possible to other initiatives.

3. Next steps from the policy side

The text agreed this week is not exactly the one that the European Commission proposed but still, the European Commission welcomes that the principle of the indicator is supported and agreed. In addition, the combination of delegated acts for definition and methodology and implementing acts for the technical modalities of implementation seems a relevant approach.

We need now to have a legal basis and for this, Council and Parliament need to formally validate the agreement. This process runs in parallel with this preparatory study. In addition to the consultation process within this study, as part of the development of each SRI legal act, there will be a consultation process and a separate impact assessment process.

In addition, Ms. Rey Garcia also clarified that the political process was now in the scoping phase and in the process of collecting all the views and data. With regard to the definition and implementation of the SRI, she suggested an analogy with the EPBD cost-optimal methodology that applies at the EU level (according to principles defined in a delegated regulation) whilst at the same time leaving margin for adaptation at the national level in the light of for instance climatic or other local specificities. The same way, the SRI calculation methodology should be a common methodology that leaves room to take into account Member State issues that are specific to implementation.

Sylvain Robert thanked the participants and reminded them that written feedback would be highly welcomed.

List of participating organizations

ADENE - Portuguese Energy Agency
Agoria
AIE (Eur.Assoc. Electrical Contractors)
AIT Austrian Institute of Technology
Architects Council of Europe
BBRI
BBSR within BBR
BEAMA
BIBM - Federation of the European Precast Concrete Industry
BRE
Bticino
Building Performance Institute Europe
Capiel & Cecapi
CECED
Cefic
CEIR / Profluid
CEMBUREAU - the European Cement Association
CENER
Centrica
Citizens Advice
COGEN Europe
Croatian ministry of construction and physical planning
CSTB (FR)
Daikin Europe NV
DG ENV
Digital home lifestyle
E.V.V.E.
EASME
EC DG GROW
Ecofys Germany
EHI - association of the European Heating Industry
ENEA (IT)
EPEE
ESMIG
ES-SO, European Solar Shading Organization
eu.bac
EURAC Research
EURELECTRIC
Eurima
EuroACE ASBL

European Association for External Thermal Insulation Composite Systems (EAE)
European Commission DG CONNECT
European Commission, DG Energy
European Copper Institute
European Heat Pump Association
European Partnership for Energy and the Environment
EuroWindow AISBL
EVIA
Federal Office for Economic Affairs and Export Control
FIEC - European Construction Industry Federation
Flemish Energy Agency (BE)
French ministry for the Ecological and Inclusive Transition
GdW
Gimélec
IFMA Europe - EU FM Coalition
Independent energy engineer
INIVE EEIG
International Association of Lighting Designers (IALD)
iTeam
KU Leuven
LightingEurope
Ministry of Construction and Physical Planning
NATIONAL CENTRE FOR RENEWABLE ENERGY - CENER
NIKO
OIB - Austrian Institute of Construction Engineering
Opinum
ORGALIME
Panasonic Europe
Polish ministry of Infrastructure and Construction
President eu.bac
REHVA
RICS
ROCKWOOL Int.
RVO /Netherlands Enterprise Agency (NL)
SAINT-GOBAIN
SaltoSystems
Schindler
Siemens Building Technologies
Slovenian Ministry of infrastructure
Smart Building Alliance
Smart Energy Demand Coalition

SolarPower Europe
SOMFY
Swedish Energy Agency
Swedish National Board of Housing Building and Planning (Boverket)
Tecnalia Research & Innovation
Vinçotte
VITO / EnergyVille
Volta
Waide Strategic Efficiency Ltd
Walloon Energy Agency (BE)
ZVEI