

# A review on Smart Readiness Indicator: Potentialities and challenges on current initiatives

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ECEEE Summer Study  
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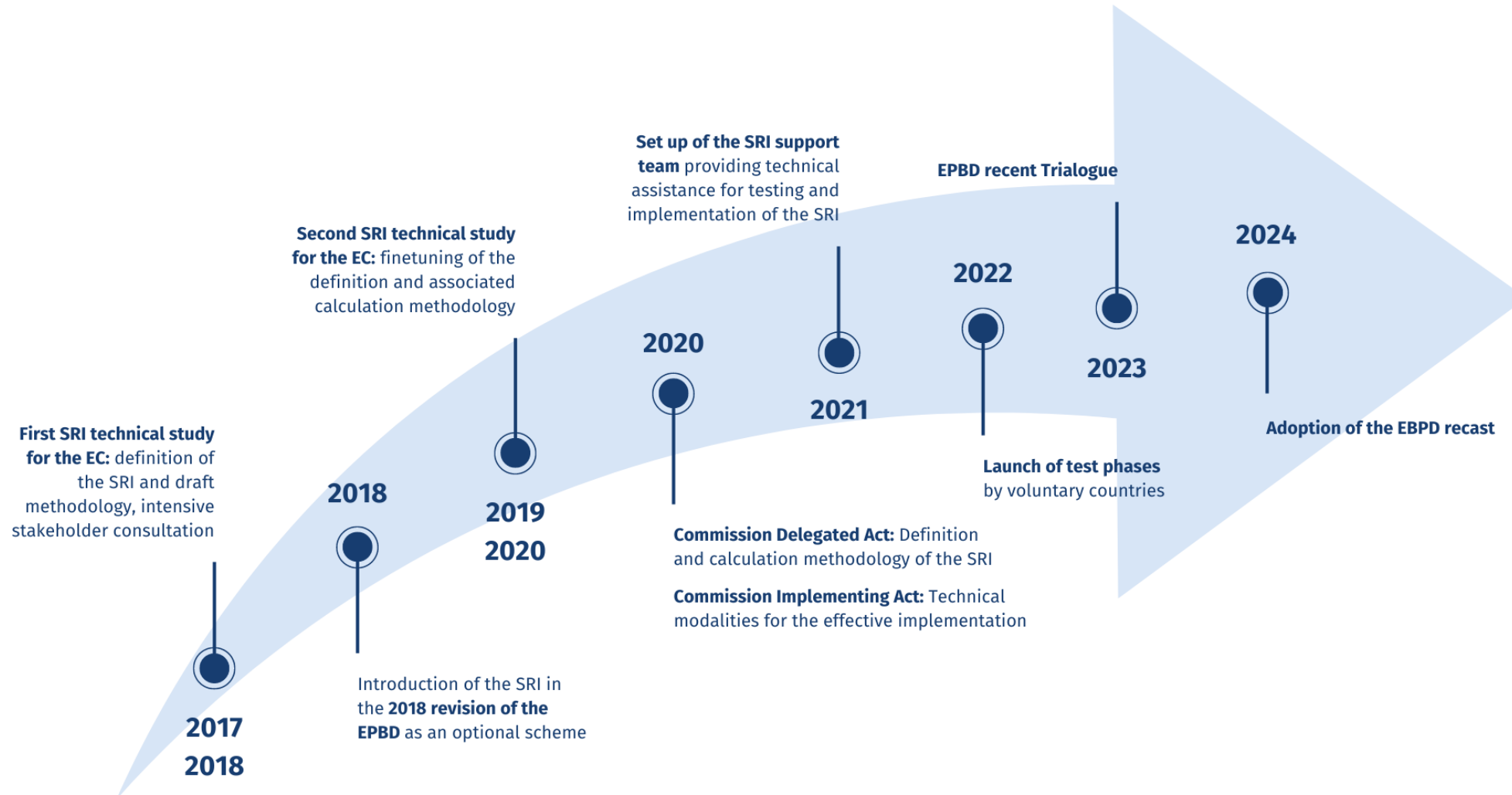


**SRI2MARKET**

19/06/2024



# Introduction & Background



# Introduction & Background

## 10 DOMAINS

heating	cooling	domestic hot water	controlled ventilation	lighting	dynamic building envelope	on site renewable energy generation	demand side management	electric vehicle charging	monitoring and control

## 8 IMPACT CRITERIA

energy	flexibility for the grid	self-generation	comfort	convenience	wellbeing & health	maintenance & fault prediction	information to occupants

## IMPACTS

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

# SRI Testing in Member States

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- Member States may decide to apply it on a voluntary or mandatory basis.
- Member States shall define the requirements for experts to qualify for issuing SRI certificates.
- Member States may decide to couple the issuing of the SRI with other assessments, such as the energy performance certificate or with existing schemes for inspection of technical systems.
- Member States may undertake a non-committal test phase of the SRI at national level. If uptaken, the SRI shall be controlled, monitored and promoted.



Here is an explanation of the logic behind the colors:



Official test phase finalised



Official test phase in progress



Official test phase not requested

# National SRI developments

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## **The SRI is currently being officially tested in 13 Member States:**

Austria, Belgium (Flanders), Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Slovenia, Germany, Poland and Spain

## **The SRI projects support 14 Member States:**

Austria, Bulgaria, Croatia, Cyprus, Czechia, France, Germany, Greece, Italy, Latvia, the Netherlands, Portugal, Romania and Spain.

LIFE CET SRI projects support Member States to successfully plan the rollout of the SRI in their national regulation and markets.

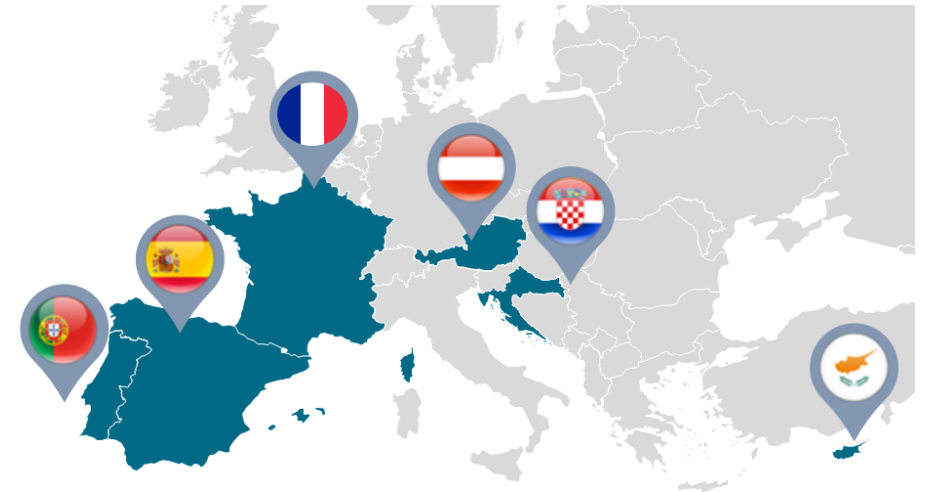


# Objectives

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The overall objective is to acquire a better understanding of the market and policy context related to the SRI of the targeted MSs.

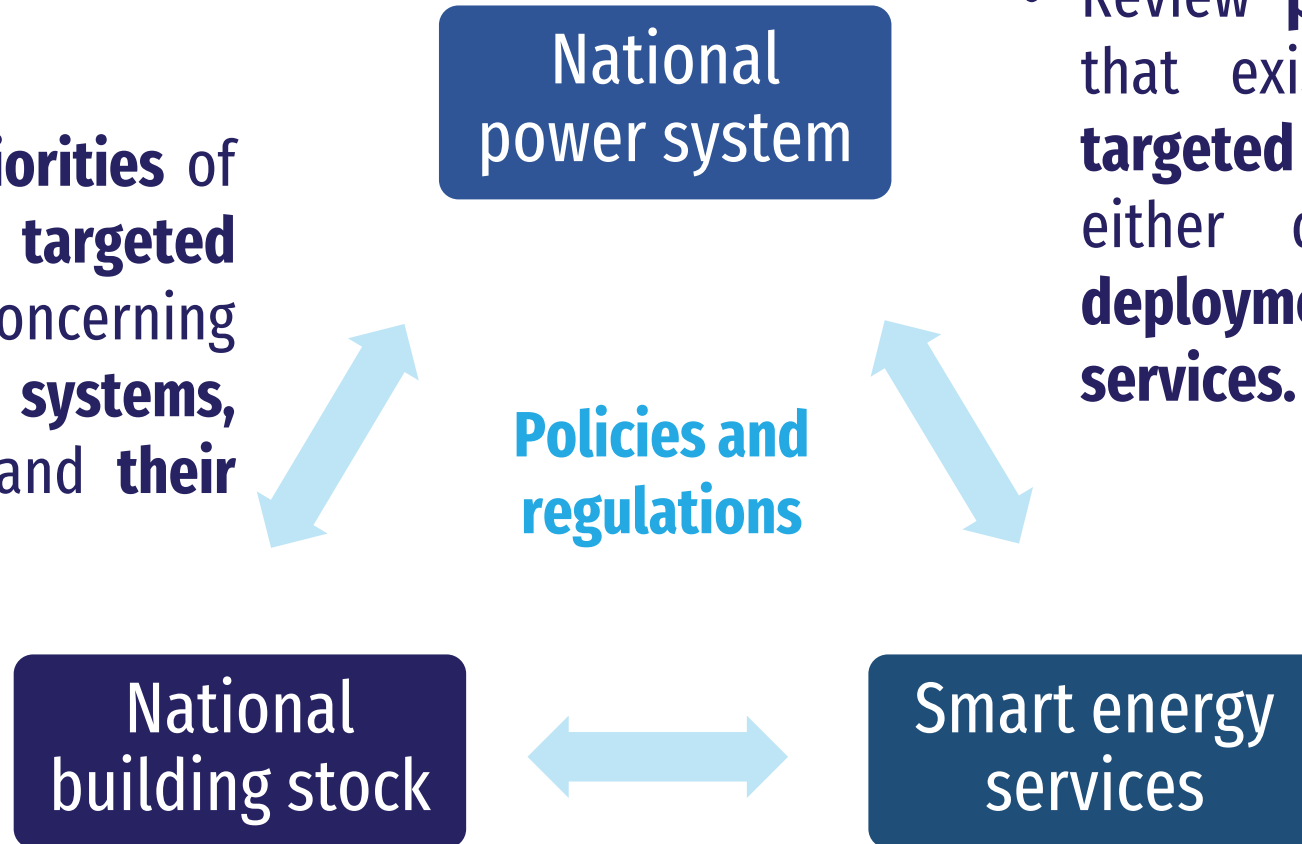
- i) How **ready** and **able** are the targeted MSs to **integrate SRI** into their national regulation?
- ii) How are they **progressing** with the SRI implementation and what are their plans for the future regarding SRI?



# Main activities

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- Review the **policy priorities** of the **EU** and the **targeted Member States** concerning their **national power systems**, **the building stock**, and **their interaction**.



- Review **policies and regulations** that exist in each of the **targeted Member States** that either drive or hold back **deployment of smart energy services**.

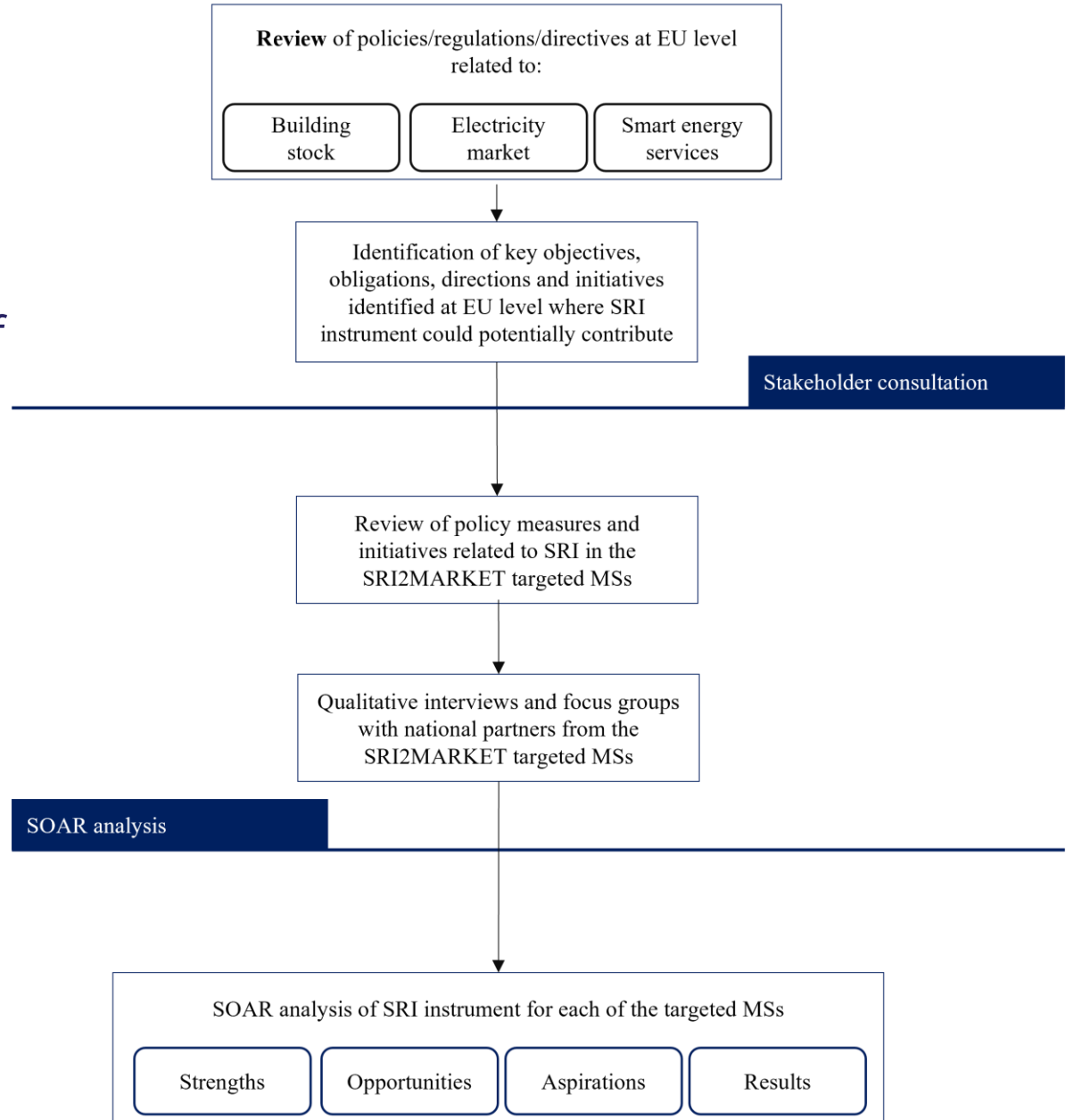
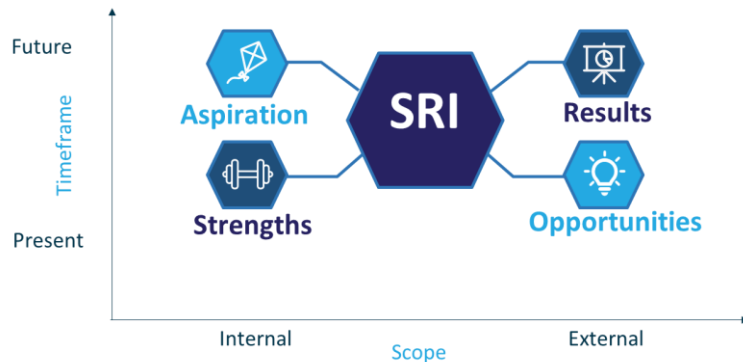
# Methods

**Step 1:** Review of the policy context for the SRI at the EU level.

**Step 2:** Review of the national policy context for the SRI of the targeted MSs

**Step 3:** National stakeholders' consultation

**Step 4:** Summarising results in a SOAR analysis





# Methods

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## Strengths

- What makes SRI a valuable tool?
- What is the greatest benefit from SRI?

## Opportunities

- What are the current trends and needs that SRI – could capitalise on?
- What is the possibility of collaboration between SRI and other relevant instruments?

## Aspirations

- What are the hopes, visions and missions that SRI could achieve and how?

## Results

- What results have been obtained so far?
- How many of the agreed goals have been achieved?



# Key results - AUSTRIA



## REVIEW

- Successful rollout of **smart meters** in most of the regions.
- Limited deployment of **BACSS, smart EV charging infrastructures, DR** and **on-site energy generation**.
- Scepticism against the implementation of **smart technology** in buildings.

## SOAR analysis:

Strengths	Opportunities
<ul style="list-style-type: none"><li>• <b>No other instrument relevant with smartness.</b></li><li>• Valuable regulatory instrument for CO<sub>2</sub> reduction and energy flexibility.</li><li>• Authorities and industry support SRI's credibility.</li></ul>	<ul style="list-style-type: none"><li>• <b>The mandatory smart meters' deployment by 2024.</b></li><li>• The promotion of (renewable) energy communities by the EAG-Paket.</li><li>• <b>The building stock digital databases.</b></li><li>• The importance of BACS to increase energy efficiency and achieve the more immediate a climate-neutral goals by 2040.</li></ul>
Aspirations	Results
<ul style="list-style-type: none"><li>• Expansion of SRI to other building types.</li><li>• <b>More quantitative indicators to provide a stronger basis for measuring and achieving energy efficiency goals.</b></li><li>• Increase SRI's reliability by assessing the usage of smart technologies and not just buildings' readiness and validating energy savings.</li></ul>	<p>The results of the ongoing test phase indicate <b>that currently SRI methodology is not reliable because assumptions are not well justified</b> and the services are not well defined.</p>

# Key results - AUSTRIA



## POLICY RECOMMENDATIONS

- Update of energy efficiency upgrade funding programs to include **smart technologies** to their eligible solutions.
- **Information campaigns** on the use of smart technologies and their benefits on energy management and consumption.
- Targeted initiatives for regions where the **smart meters'** adoption is limited, to achieve their rapid and homogenous uptake.
- Develop the **DR market** and a legislation harmonized in all regions, for buildings of a wide variety of uses and types.
- Harmonisation of **on-site energy generation** legislation in all regions to facilitate its deployment.
- Based on test phase experience, development of **SRI** regulation for the stakeholders involved and the typology of buildings included.

# Key results - CROATIA



## REVIEW

- Active requirements for **BACS** in new buildings and for buildings under renovation.
- Standards for **EV charging infrastructures** in new buildings, without having legislative framework governing their operation.
- **Smart technology** installations and related interventions are included in the renovation plans.
- **Energy storage** is regulated but not widely implemented in building sector.

## SOAR analysis:

### Strengths

- Smartness, through flexibility, increases the efficiency and performance.
- SRI provides quantification of savings due to the installation and implementation of smart technologies.

### Opportunities

- **The electrification of the building sector brings risks to the distribution and transmission grids that can be overpassed by the implementation of smartness.**
- The provisions of the EPBD, EED, Energy Market Regulation and the accompanied deployment of new technologies and schemes.
- **There are already renovation schemes including smart technology installations.**

### Aspirations

- The establishment of legislation, tools, and certification processes for SRI.
- The integration of SRI into the EPC.
- **Introduction of SRI through an educational process similar to the introduction of EPCs.**

### Results

- No results have been obtained, since **SRI test phase has recently started.**

# Key results - CROATIA

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## POLICY RECOMMENDATIONS

- Technology-push policies for building-scale **energy storage**.
- Grid operators in Croatia should accelerate **smart meters**' installation, targeting a wide variety of end-use buildings.
- Update of net-metering schemes for on-site PV energy generation to enable both **self-consumption** and **grid feeding**.
- Design of expansion measures for the **national DR market**.
- Develop legislation on **EV charging operation** and include **smart chargers** in the current mandates for charging infrastructures.
- Include criteria regarding **occupants' comfort, well-being and health** in energy performance of buildings legislation.
- Train professional SRI assessors, establish business models, initiate a test-phase and identify the suitable building typology.

# Key results - Cyprus



## REVIEW

- Several renovation schemes that include the installation of **smart technologies** and **automations**.
- Requirements regarding **occupants' comfort and well-being** are included in the national Energy Performance of Buildings Law.
- Schemes **on-site RES generation** that permit self-consumption and grid feeding are widespread.
- Funds are granted for an extensive network of **EV charging stations** to be developed.

## SOAR analysis:

### Strengths

- **Ability to use and manage a building efficiently, with high performance and in order to satisfy occupants' well-being.**

### Opportunities

- DSO's obligation to proceed with appropriate actions for the widespread installation of smart meters for all electricity consumers.
- **Ongoing renovation schemes that include smartness or automation technology and the planned SRI test phase.**
- The electrification of the transport sector brings risks to the distribution grids that can be overpassed by the implementation of smartness.
- **Occupants' comfort requirements integrated in national legislation.**

### Aspirations

- Contribute to zero-emission goals by correlating SRI's results with energy consumption.
- The integration of SRI into the EPC.

### Results

- There **are not any results obtained yet.**
- **The success of the SRI implementation test phase will depend on the assessment** of its outcomes and how they can be correlated with energy consumption and CO2 emissions.

# Key results - Cyprus

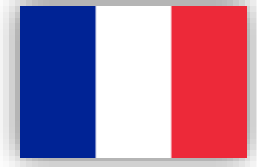
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## POLICY RECOMMENDATIONS

- Incentivise DSOs to comply with the Energy Regulatory Authority's Decision and intensify their efforts to diffuse **smart meters** to their electricity consumers, by developing business models that generate revenue streams towards them.
- Cyprus should establish a legislative framework for **EV smart charging** installation and operation and developing targeted mandates for their diffusion in the building sector.
- **SRI** should be integrated within the national building's legislation.

# Key results - FRANCE



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## REVIEW

- The **smart meters**' rollout is complete.
- The **DR market** and related schemes are well-established.
- Various active schemes on **on-site RES energy generation** and **consumption**.
- Active requirements for **BACS** and **heating automation systems** for large buildings.
- Regarding the **needs of occupants**, only summer passive comfort is addressed in national legislation and in EPC's criteria.
- The SRI test phase highlighted the need of a **more thorough training for assessors** on SRI methodology and service catalogue, and the adaptation of SRI's weight factors according the **official climate zones of the country**.



# Key results - FRANCE



## SOAR analysis

### Strengths

- **The smartness of buildings is necessary to decentralize the energy system and the renewable energy production.**
- **The smartness of buildings is able to smoothen the curve of daily electricity demand.**
- Flexibility through smartness minimizes risks in the distribution grids.
- **Test phase including building of various usage type.**

### Opportunities

- **The DR mechanisms are already significantly developed.**
- The implementation of the BACS decree will help the upgrade of the smartness of buildings through the activation of the related market.
- The completed rollout of smart meters.
- **The provisions of the EPBD, EED, Energy Market Regulation and the accompanied deployment of new technologies and schemes.**
- **Plethora of demonstration pilots of smart grids at district level** supported by the energy and environment agency ADEME, the energy regulator CRE and the Ministry of Ecological Transition.
- The electrification of the transport sector brings risks to the distribution grids that can be overpassed by the implementation of smartness.
- In large non-residential buildings automation systems are already installed.
- Exploitation of information from the common EU DBL.

### Aspirations

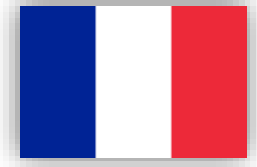
- Participation of SRI in the achievement of goals for zero-emission energy systems by 2050.
- Expansion of SRI to all building categories, even to single family apartments.
- Update of the EPC by integrating the SRI into it.

### Results

- Feedback from test phases that mentions challenges **with the complexity of the service catalog, vocabulary, and functionality levels. Assessors struggle to assign functionality levels and require more guidance and examples.**
- **Existing buildings achieve very low scores, indicating that the SRI is forward-looking and futuristic.**

# Key results - FRANCE

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## POLICY RECOMMENDATIONS

- Mandates for the installation of **EV smart charging infrastructures** on public buildings.
- Residential EV charging infrastructure funding schemes should prioritize **smart chargers**.
- Legislation on **occupants' comfort and well-being** must include all year comfort and to refer to active systems.
- Incentives for the uptake of **building-scale energy storage**.
- The educational courses for the **certification of professional SRI assessors** should be enriched with portfolio examples, guidance on functionality levels and robust mapping of the service catalogue.

# Key results - PORTUGAL



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## REVIEW

- The **SRI** and smart technologies are included in national legislation but an **SRI test phase** is not formally approved and the implementation of **smartness** is not included in any funding scheme.
- **Smart meters** have been widely installed but the majority of them is not transmitting data.
- **DR schemes** have not been regulated.
- No regulatory framework in the national legislation for the operation of **smart EV charging stations**.
- The SRI service catalogue lacks **technologies applied in the South European countries**.

# Key results - PORTUGAL



## SOAR analysis:

Strengths	Opportunities
<ul style="list-style-type: none"><li>• <b>Broad concept of smartness that can have different impacts depending on the type of building and its usage.</b></li><li>• An informative tool that can generate conclusions on the de facto energy consumption and CO<sub>2</sub> emissions.</li></ul>	<ul style="list-style-type: none"><li>• A lot of new investments and new regulations related with flexibility are going on which means that there is need for flexibility.</li><li>• SRI and BACSs have already been included in the regulatory framework and integrated into the EPC for optional implementation.</li><li>• <b>The existence of a platform to upload and retrieve all the information included in the EPC, boosts the roll out of SRI.</b></li><li>• Wide rollout of smart meters and mandatory provisions for EV charging infrastructures.</li><li>• Active customers may be interested in implementing smartness, so the governments boost to energy communities may offer opportunities for smartness.</li></ul>
Aspirations	Results
<ul style="list-style-type: none"><li>• Participation of SRI in the achievement of zero-emission energy systems goals by 2050, if there is further development to correlate SRI score with real energy consumption.</li><li>• Wide implementation of SRI also in building types where it is not mandatory.</li><li>• <b>Inclusion of smartness and smart technologies as requirements into the public fundings for renovation.</b></li></ul>	<p>In discussions to start official test phase of the SRI. Some thoughts from the feedback from test phases mentioned challenges on correlating the SRI score with real energy consumption and CO<sub>2</sub> emissions, <b>outcomes that depend on assessor's perspective and that the service catalog lacks technologies implemented in South Europe.</b> Additionally, <b>the SRI methodology needs to be calibrated to the climate and building typology of each country.</b></p>

# Key results - PORTUGAL



## **POLICY RECOMMENDATIONS**

- **Incentives for DSOs** to complete the installation of smart meters on all consumption points, such as establishing innovative business models that create revenue streams towards them.
- Integration of **smart EV chargers** in EV charging infrastructures' **mandates**.
- Establish legislation for the operation of the national **DR market**, and support DR market to increase its participants.
- Existing energy efficiency upgrade funding schemes should include **smart technologies** and **BACs**.
- Approval and initiation of an official **SRI test phase**, after **updating the service catalogue** to include technologies implemented in Portugal, such as the solar water heating systems.

# Key results - SPAIN

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## REVIEW

- Mandates for **BACS** in lighting and thermal systems have been established.
- The rollout of **smart meters** have been almost completed.
- There are several schemes for **self-consumption** and **energy storage**.
- **Renewable Energy Communities** and their funding schemes are regulated.
- There are active **smartness requirements** for new or renovated buildings.
- Requirements regarding **occupants' comfort and well-being** are well established.
- An **SRI test phase** is officially planned, while training courses on SRI tools are already held by several institutions.

# Key results - SPAIN



## Strengths

- SRI can contribute to the energy transition by integrating buildings into the electricity grid, providing flexibility and DR capabilities.
- **SRI can provide policymakers with an overall picture of the building stock and help develop specific policies for funding and upgrading buildings.**
- SRI could be used to provide recommendations for new buildings.

## Opportunities

- Mandatory requirements for BACS in lighting, heating, cooling, combined heating and ventilation or combined cooling and ventilation.
- Obligations for installation of smartness when a building is renovated.
- **There already have been some SRI assessments in tertiary, public and residential buildings.**
- EPC stakeholders are also SRI stakeholders. EPC could integrate SRI.
- Trainings on SRI tools are already launched by several institutions.
- **A test phase with at least 50 case studies across Spain will take place within the context of the SRI2MARKET project.**
- Some requirements regarding occupants' comfort and well-being are already included in the legislation.

## Aspirations

- Mandatory implementation of the SRI assessment to the whole building sector.
- Update of the EPC by integrating the SRI into it.
- Update of the SRI methodology to provide direct insights on energy consumptions and quantified recommendations to improve performance and efficiency.

## Results

- **Feedback from the first SRI assessments mentions that it should include quantitative evaluation of the impact of smartness on the energy performance of the building and estimation of investment costs, and it needs to be calibrated to the climate and building topology of each country.**
- **Current assessments conducted, lead to very low scores even for very sophisticated buildings.**

# Key results - SPAIN

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## POLICY RECOMMENDATIONS

- Regulation and support of the expansion of **DR market** to small businesses and residential buildings.
- New **smart technology funding** schemes should be designed.
- **Smart EV chargers** must be supported by integrating them in existing building mandates and including them in smart technology funding schemes.



# Conclusions

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# Testing



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MONITORING

# For more information

## SRI actions and tools



**SRI in EU countries** ([/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/sri-eu-countries\\_en](#))



**Implementation tools** ([/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/implementation-tools\\_en](#))



**Communication kit** ([/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/communication-kit\\_en](#))



**Stakeholders events and news** ([/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/](#)



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**LIFE projects supporting SRI** ([/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/](#)

## SRI2MARKET

SRI2MARKET Project – Paving the way to adoption of the SRI into national regulation and market

## D2.1 Policy context for the SRI

Dimitra Tzani & Alexandros Flamos

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# Thank you!

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